THIS WEEK'S National Petroleum NEWS

Index to Coming Meetings

National Petroleum Association, Riverside Hotel, Cambridge Springs, Pa., Apr. 25, 26.

Mid-Continent Oil Scouts' and Land Men's Association, Wichita, Kan., Apr. 26, 27.

American Chemical Society, Petroleum Division, Columbus, O., Apr. 29 to May 3.

Kansas Oil Men's Association, Broadview Hotel, Wichita, Kan., May 2, 3.

American Gas Association, Natural Gas Dept. Kansas City, Mo., week of May 6.

Wisconsin Petroleum Association, Beaumont Hotel, Green Bay, May 15.

Virginia Independent Oil Men's Association, Richmond Hotel, Richmond, Va., May 15, 16.

National Oil Scouts Association of America, Fort Worth, Tex., May 20, 21.

Natural Gasoline Association of America, Mayo Hotel, Tulsa, May 21, 22, 23.

Independent Oil Men of America, Stevens Hotel, Chicago, Oct. 21, 22, 23.

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FROM office boy to president, tells the story of Frank B. Fretter, president of the National Refining Co., Cleveland, one of the largest and oldest of the Independent oil companies of the country.

It was close onto fifty years ago —which takes us well back into his short-pants of boyhood—that Mr. Fretter quit selling papers and got a job with what is now the National. There was no bookkeeper so after a few weeks he added that chore to his job. There was no salesman (singular) and a few weeks later he took over those duties also.

That was back in the days when Cleveland had a score or more small refineries as well as the then big (?) plant of the original Standard Oil Co. As the National's business grew, it reached into new crude oil territories, built more stations and refineries and more titles were added to Mr. Fretter's original one.

Mr. Fretter has been for years active in the affairs of the National Petroleum Association, the oldest association of oil men, and for a number of years has been a member of the board of directors of the American Petroleum Institute, and also has been one of its vice presidents.

NATIONAL PETROLEUM NEWS

Vol. 21 CLEVELAND, APRIL 24 No. 17

Up in the Air Over Kettleman Hills, Focus in Conservation Issue

By Paul Wagner
N. P. N. STAFF WRITER

LOS ANGELES, April 19

I'VE been up in the air over the Kettleman Hills; not figuratively, like the Interior Department at Washington and the California oil operators, but literally. I'm down on the ground again. They're not.

All the engines of the tri-motored Fokker of the Richfield Oil Co. purred like so many kittens when our plane took off from Vail field, Los Angeles, April 17, for a total of three hours and 32 minutes in the air.

After a similar period of time in conference April 19, Kettleman Hills operators were little farther along than they were when Secretary of the Interior Wilbur asked them to shut in, or curtail, production in the newly threatening area. A committee of seven named at the conference is to call a meeting for further discussion of Kettleman problems and report a plan to the Interior Department.

What has centered upon this district the attention both of the government and the leaders in the oil industry who are behind the American Petroleum Institute restrictive production program is the fact that about 40,000 barrels a day production here, because of the extremely high gasoline content of the crude, would be equivalent to 150,000 barrels output in the average California light oil field, in terms of gasoline.

Kettleman Hills, in Kings county, not far from the present Coalinga field, since last December, has been known to be a district of great producing possibilities. One well there has been producing 4000 barrels a day of crude with about 90 per cent gasoline, from below 7000 feet for over four months.

A few weeks ago another well, over six miles from the discovery well, was drilled in making 2000 barrels a day of equally high gravity oil. Other tests are drilling. The structure in

Paul Wagner Will Report on California Program

OVERNIGHT the new Kettleman Hills district in California became the problem of both the government and the oil industry, in any production curtailment program.

Opened last December as a new light oil field with possibilities for large production, a new well southeast of the discovery recently extended the probable productive area by over six miles.

Both the government and the leaders in the oil industry realize the importance of delaying development of a territory which, in a few months, could bring a potential gasoline supply to the surface as large as any other California field is now making.

Secretary of the Interior Wilbur, in the interests of public lands, and oil operators

with holdings on private lands now seek some cooperative method for restraining Kettleman Hills development.

There are also other problems, besides holding back Kettleman Hills, connected with making the American Petroleum Institute program for restricted production effective in California.

April 22 Los Angeles Basin and California Coast fields were to be cut back in production by 130,000 barrels daily.

When it was foreseen that Kettleman Hills might be the focal point in the entire conservation program, NATIONAL PETROLEUM NEWS sent Paul Wagner, its production analyst, to California. The accompanying is his first article. Others will follow.

this field is 22 miles long, with three known domes upon it.

Reconciling development of the Kettleman Hills field with the program for holding back production in this country, by districts, to the 1928 average level, is the foremost problem before the industry today in the general conservation movement.

All of which may be taken as the reason for a trip by airplane over this coming field and a first hand study of the conservation program as it is to be applied in California.

There has been little real opposition in California to the movements of the good ship "Stabilization," but the tuning-up of its "tri-motored" mechanism can hardly be said to have been as auspicious as that which preceded our trip over Kettleman Hills.

Our motors were all functioning perfectly from the start. Hence, all was smooth across the Tehatehapis, up along the foothills skirting the San Joaquin valley to the Kettleman area and back again to the starting point of our trip.

The "motors" on the good ship "Stabilization," however, require further adjustment. It also is a tri-motored affair, embracing (1)—voluntary prorating of production administered by a state umpire; (2)—passage of an oil/gas ratio bill now pending in the California legislature; and (3)—curtailment in Kettleman Hills through machinery to be set up by operators in response to Interior Department suggestion.

At the time this was written there had appeared no real resistance to voluntary prorating of production through the umpire, F. C. van Deinse, formerly president of the Ventura Refining Co., and afterwards a vice president of California Petroleum Corp. before its absorption by The Texas Co.

Mr. van Deinse's order, putting prorating practice in effect, becomes operative at seven the morning of April 22, when the first stage will be accomplished in curtailing California yields to the daily average of 1928 at 648,153 barrels daily.

On the date mentioned a cutback of 129,530 barrels daily is contemplated in the Los Angeles Basin and Coast fields of California.

As soon as a second order can be prepared, and not later than May 1, a reduction of 15,626 barrels is to be made in the San Joaquin valley fields. Together, the curtailed areas will aggregate 145,156 barrels of cutback potential production.

Unless some unexpected flaw develops in the tuning-up operation the prorating "motor" may be said to be working satisfactorily, at least for the present.

Before the end of the month, a second "motor" known as the oil/gas ratio bill is expected to go humming through the legislature and to Governor Young for prompt signing. That bill, because it provides against wastage of gas and will cut down daily average production of wells under conditions prevailing in California, is considered a satisfactory "motor" to function in case voluntary prorating should hit a snag.

Oil operators with whom I have talked, and they have been a representative lot, feel every confidence the gas/oil ratio bill will pass. It was framed by the operators at the insistence of Governor Young, so that its signing after passage is not doubted.

Should need for the bill appear in the stabilization program, however, it could not become effective until August 1, because of the 90 days required under legal processes; also the time necessary to put machinery into action for administering the statute.

The third "motor" on the stabilization ship, perhaps it should be called an auxiliary, depends upon agreement of the Kettleman Hills operators and the Interior Department at Washington with regard to the Hoover administration's conservation policy.

There is no doubt about this "motor" working also, but the degree of its efficiency must remain in question for the present. Most of the operators are willing to curtail operations, some of them to shut down entirely, but they must have assurance that the Secretary of Interior can suspend departmental regulations and protect their rights in the circumstances.

In addition to requiring that assurance, which probably can be given them, the operators must iron out among themselves an equitable plan for handling production in relation to drilling well depths and competitive field conditions.

As previously reported[1], the discovery well of the Milham Corp., in 2-22-17, continues to produce approximately 4000 barrels daily of 61 A.P.I. gravity oil and upwards of 75,000,000 cubic feet of gas daily. Six and a half miles south-southeast of it, in 26-22-18, the General Petroleum Co.'s Ochsner well tested at the rate of 2000 barrels of oil and 25,000,000 cubic feet of gas daily, 45 feet higher

[1]National Petroleum News, page 31, April 17, 1929.

Prorating Allowances, by Fields, in Coast and Los Angeles Basin Areas, California Effective April 22

Field or District	Potential Production (Barrels)	Allotted Production (Barrels)	Per Cent of Potential
West Coyote	10,553	9,481	90.00
Dominguez	10,004	9,770	97.66
Elwood-Goleta	26,900	20,000	74.35
Fullerton, Brea Olinda and East Coyote	15,165	13,814	91.10
Huntington Beach	47,610	42,259	88.75
Inglewood	25,843	23,480	90.86
Lawndale	714	714	100.00
Long Beach	188,874	133,982	70.94
Salt Lake	1,189	1,189	100.00
Montebello	10,832	10,525	97.25
Newport Beach	46	46	100.00
Potrero	909	537	58.97
Richfield	17,194	15,679	91.27
Rincon	3,577	2,934	82.05
Rosecrans	5,513	5,513	100.00
Santa Fe Springs	156,669	125,000	*
Santa Maria	4,728	4,658	98.50
Seal Beach	48,702	33,004	67.76
Summerland	132	109	82.58
Torrance	15,105	13,700	90.70
Ventura Avenue	56,217	51,084	90.87
Ventura County & Newhall	5,357	5,034	93.98
Watsonville	60	54	90.00
Whittier	1,658	1,420	85.65

*Meyer and upper zones, 90 per cent; Nordstrom and lower zones, 77.7776 per cent.

(New wells brought in within the period of the order will be permitted to produce uninterrupted for a period not exceeding 10 days, at the termination of which a special interim order applicable to such well, or wells, will issue, pending application of the next general order of the umpire.)

A section of a mosaic of the Kettleman Hills field, in California, made from photographs taken from the air, showing the location of the two wells producing high gasoline content crude from below 7000 feet. The mountainous nature of the country is plainly shown. The map is on the scale of a mile to an inch

structurally than the Milham when adjusted to sea-level elevation.

The General's well has been "killed" and is drilling deeper to test the full value of the extension. Meantime, other tests are drilling to the 7000-foot pay in the area offsetting the Milham discovery and down the flanks of the Kettleman "north dome" anticline.

Each alternate section on the north, central and south domes forming the general Kettleman Hills structure is owned in fee simple by the Standard Oil Co. of California, which has been committed to stabilization through curtailed operations wherever possible. The Milham discovery, however, forced the Standard to drill two offsets on its fee land.

Marland Oil Co. of California is known also to favor suspended operations provided equities are preserved and competitive conditions of drilling maintained under present relative terms.

Some of the other companies owning permits in the adjacent area, namely, Pacific Western Petroleum Corp., and Kettleman Oil Corp., are in the stages of company building where new production would aid them materially.

Milham Corp., subsidiary of Mexican Seaboard Oil Co. of Maine, could also stand the building up of production for corporate purposes, since it represents the Mexican Seaboard's mainstay since the companion International Petroleum Co.'s Toteco property was all but flooded out of the Tampico district picture several years ago.

It would be possible, of course, but for corporate requirements, to shut in wells at Kettleman, carry drilling tests down to water shut-off levels and preserve time equities in development.

For example, if the Milham well is in physical condition to shut in its production could be stopped until such future time as resumption fitted into the industrial situation, whereupon it would be allowed say 15 days exploitation before any other operator resumed work. Then, drilling wells stopped at water shut-off levels could be started up again at intervals of 15 and 25 days, according to depth attained at time of reaching a curtailment decision.

At the April 19 meeting of Kettleman operators the only definitely proposed plan was that of the Milham Corp., which suggested limiting the production of four companies, in the discovery well area, to 10,000 barrels each daily until June 30, 1930; the four companies being itself, the Standard Oil Co. of California, the Marland Oil Co. of California, and Pacific Western Petroleum Co., through Kettleman Oil Corp., permittee.

On 61 gravity oil yielding approximately 90 per cent gasoline as has been found in both the Milham and General wells, the building up of 40,000 barrels daily production would equal a 150,000 barrel daily production field of average California light oil.

The plan would have contemplated other operators on the huge north dome structure shutting down in compliance with Secretary Wilbur's request for curtailed development. As discussed by William Boekel, Milham attorney, before the meeting went into executive session, the plan took no account of the General Petroleum Corp.'s discovery, six and a half miles away on the same north dome structure.

On permanent organization, preceding executive session, the Kettleman group elected Umpire van Deinse as permanent chairman of their meeting. Later, he appointed seven representatives of operators, lessees and permittees to work with others directly interested in developing a plan for presentation to Secretary Wilbur.

The committee consists of W. H. Berg, alternate M. E. Lombardi, Standard Oil Co. of California; W. L. McLaine, General Petroleum Corp., subsidiary of Standard Oil Co. of New York; William C. McDuffie, Pacific Western Oil Corp.; Elsworth McGowan, Kettleman Oil Corp.; Judge Reider, E. J. Miley Oil Co.; R. N. Ferguson and Joe Rainey, permit holders.

The Goal

Latest figures on production in the principal districts in this country, compared with the 1928 daily average basis as reported by the U. S. Bureau of Mines. This latter is the figure to which output is to be held this year under the American Petroleum Institute restrictive program:

District	1928 Basis	April 20 1929
Okla.-Kansas .... Texas-Ark.	786,585	782,700
Louisiana	849,205	908,850
California	633,831	796,600
Bal. U. S.	190,391	183,700
Total U. S.	2,460,012	2,671,850

Institute May Drop Conservation

By Telegraph

NEW YORK CITY, April 23

PROBABILITY that The American Petroleum Institute directors in their meeting here Wednesday will withdraw from the conservation movement as an association was seen today as the members began to arrive from various parts of the country.

Such action it is pointed out by several would be the only consistent thing that could be done in view of the recent adverse opinion of Attorney-General Mitchell. In that opinion he informed The Federal Oil Conservation Board that he believed the plan on which the Institute worked so diligently might run counter to federal laws.

A meeting of the regional committee, chairman and other delegates which make up the general committee of thirteen was held Monday in the offices of R. C. Holmes, the chairman, and another is being held today. The executive committee of the institute meets tomorrow morning and the directors in the afternoon. The sole business in these several meetings is the discussion of the Institute's part in the conservation work and its future course of action.

An expression probably will be made by the directors of the Federal Oil Board offering assistance in furthering the "interstate pact" proposed by the board chairman two weeks ago. As realization of such a program is dependent upon favorable action by Congress, it is conceded to be a long time off.

In the meantime the conservation work will have to revert to states and to local associations as it has been held by courts repeatedly that intrastate control of production violates no federal laws.

Contracts Awarded for St. Louis Gas Line

NEW YORK, April 20.—Contract for the construction of the 460 mile gas line from the Monroe, La., gas fields to St. Louis has been let to Ford, Bacon & Davis. The line is to be built for a syndicate headed by the Standard Oil Co. of New Jersey and the United Gas Co.

The entire right of way has been obtained for the $26,000,000 line. The line is expected to be ready for operation by Dec. 1. It will carry about 100,000,000 cubic feet per day at the outset. The 24-inch size will permit the marketing of 150,000,000 cubic feet, the estimated potential market at St. Louis.

A sub-contract for a major part of the line has been awarded to Williams Bros. Pipe is to be furnished by the A. O. Smith Corp. and the National Tube Co. Work is to start at once.

The United Gas Co., second largest interest in the syndicate, operates four gas systems in Texas and Louisiana. It sells more than six billion cubic feet of gas per month.

James A. Bermingham

Bermingham Moved To California

LOS ANGELES, April 20.—James A. Bermingham, recently stationed at Denver as vice president and manager of The Texas Production Co.'s Rocky Mountain development, is being transferred to The Texas Co. of California at Los Angeles. He will become production manager in California, under vice president C. E. Olmsted.

Before his transfer to Denver last fall, Mr. Birmingham was assistant division manager at Fort Worth for The Texas Co. Prior to that he had been connected with the land department of the Simms Oil Co., Dallas. He is widely and favorably known throughout the southwestern industry.

Hoover Oil Policy Is Questioned

WASHINGTON, April 22.—Senator King, Democrat, of Utah, by means of a resolution offered in the Senate, has publicly raised a question as to the power and therefore of the legality of President Hoover's policy of not issuing any more permits to prospect for oil and gas on the public domain. The resolution directs the judiciary committee of the Senate to make a full and complete inquiry as to the power and authority of the President to modify, suspend, or set aside the leasing act of 1920, or any act of Congress by executive statement or otherwise, or to deny to citizens of the United States the exercise of any rights granted them by the leasing act. The committee would be authorized to inquire into the power and authority of the Secretary of the Interior to promulgate or enforce rules, orders or regulations designed to carry out the policy of no permits issued by the President on March 12.

This resolution is preceded by a recital of the public land policy of the United States beginning with the constitutional power of Congress to dispose of and to make all needful rules respecting the territory or other property belonging to the United States and ending with the enactment of the national leasing law of February 25, 1920. This law substituted, as the preamble of the resolution said, the policy of leasing for the policy of alienation theretofore embodied in the various homestead and mining laws.

The resolution lays it down as established that the national leasing law confers upon citizens of the United States the right to obtain prospecting permits and that citizens cannot be deprived of that right by anything other than a repeal, by Congress, of the statute saying that the public lands were subject to disposition under the terms and as provided for in the national leasing act.

New Hunton Lime Pool Found

(By Telegraph)

TULSA, April 22.—Opening what is expected to be another Hunton lime pool in southwestern Seminole county a wildcat in the SE NE NE of 2-7N-4E came in yesterday for about 50 barrels an hour. The well which is being drilled by a group of interests in which the Sinclair Oil and Gas Co. and the Shaffer Oil Refining Co. are a part topped the Hunton at 3750 getting 4,000,000 cubic feet of gas per day from 3756-66. Present total depth is 3775.

Three Phillips Men Elected Vice Presidents

BARTLESVILLE, Okla., April 20 CHANGES in the executive complexion of the Phillips Petroleum Co., the election of three men long prominent in management to be vice-presidents, marked the annual meeting of stockholders of the Phillips Petroleum Co., held April 16.

An outstanding production man, Clyde Alexander, for several years a vice-president of the company, was made general manager. He succeeds L. E. Phillips, one of the founders of the company and brother to Frank Phillips, president. The retiring general manager was made chairman of the executive committee in compliance with his request that he be relieved of operating details.

Mr. Alexander has been connected with the Phillips company since its infancy. He is one of the up-from-the-ranks executives, so numerous in major oil companies. Like so many of the outstanding operators, he began in Pennsylvania, as a tool-dresser.

John H. Kane was elected executive vice-president. He has been a vice-president of the company for several years. Originally, his duties were confined to the direction of the legal department, but he has gotten more into operating phases of the company in the past three or four years.

The new vice-presidents are Paul J. McIntyre, J. S. Dewar and J. Melville Sands. Mr. McIntyre has headed the land department for the past six years, during which time he has handled the leasing of many thousand acres in the Mid-Continent and Texas and has participated in the numerous sales of Osage oil leases. The Phillips company has been an outstanding buyer of such acreage, particularly in the Burbank area, where it is one of the leaders.

Clyde H. Alexander
New General Manager of the Phillips Petroleum Co.

J. S. Dewar has been head of the production department, as assistant to Mr. Alexander, for some six years.

Mr. Sands is in charge of the economics department and is consulting geologist to the company, making numerous special investigations of producing and prospective territory. He has published several articles in technical journals, outstanding among them being his studies of the Burbank field.

All other officers of the company were re-elected, they being Frank Phillips, president; W. N. Davis and H. E. Koopman, vice-presidents and O. K. Wing, secretary and treasurer. Two new directors, John G. Phillips, Bartlesville and Charles A. Lemp, St. Louis, were elected to fill existing vacancies.

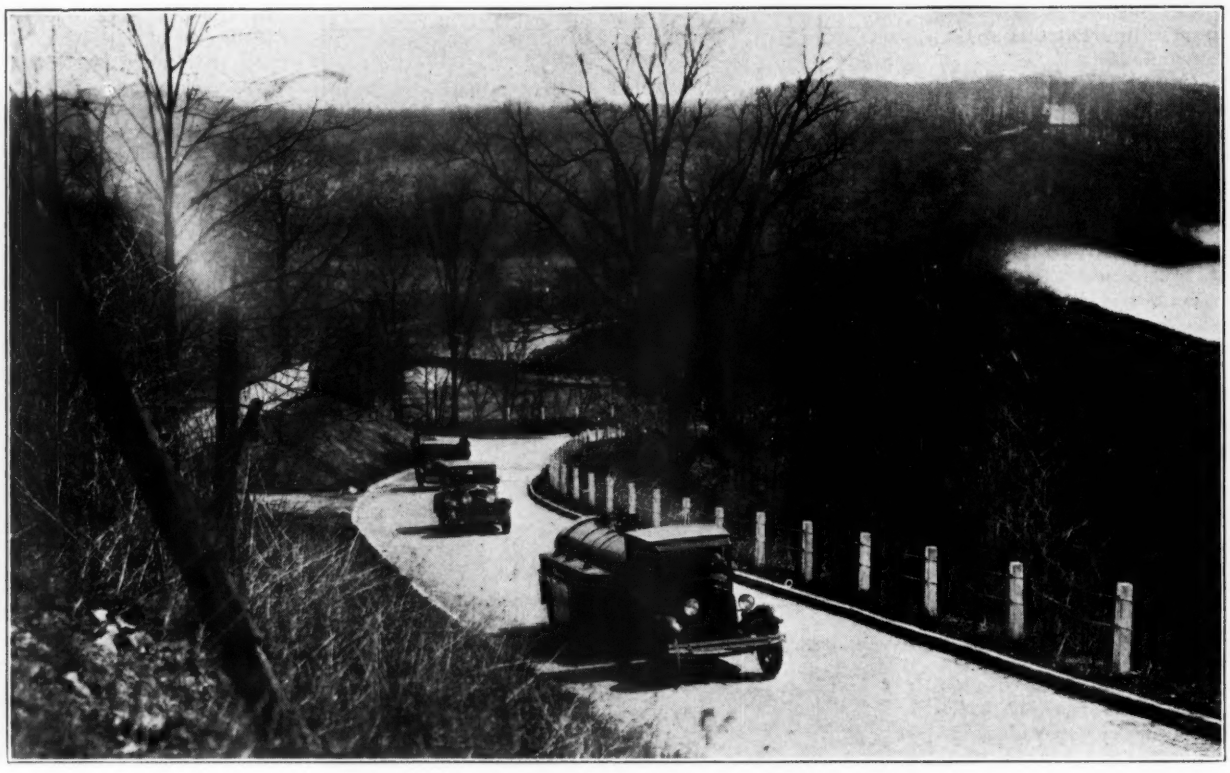
Phillips Petroleum Co. is one of the largest Independent producing companies in the Mid-Continent. It has a larger production of natural gasoline than any other company and recently has been expanding as a refiner.

Paul J. McIntyre

J. M. Sands

J. S. Dewar

Light Truck Tractors for Oil Deliveries Given Strenuous Road Tests



General view of countryside where tests were made

CLEVELAND, April 20

THE day of the big heavy duty truck with a 1500, 1600 or even larger tank mounted on its back is rapidly passing in the opinion of many oil company motor transportation officials. The heavy duty trucking units are being replaced by light or medium duty truck tractors to which are attached tanks mounted on or built into semi-trailers. Tests of the hauling ability of the new lighter units have just been held at Gates Mill, O., near Cleveland in the presence of almost 200 men interested in gasoline and oil transportation. Results of these tests are given in the four tables published with this article.

The tests, the first of the kind ever held in this country according to men who have been in the motor transportation industry since its infancy, proved to the satisfaction of the oil company men that the light truck tractor will be the means of making gasoline deliveries in the immediate future.

The Standard Oil Co. of Ohio has already ordered 75 semi-trailers and tanks and the National Refining Co. is said to be considering ordering more than 250 light units to replace medium sized units that have been

By Roger B. Stafford
N. P. N. STAFF WRITER

in service for a truck lifetime.

The Standard of Ohio already is operating seven 2000-gallon semi-trailer jobs with 2½-3-ton truck tractors and one 1000-gallon semi-trailer job with 1½-ton tractor. National Refining Co. has two 750-gallon semi-trailer jobs drawn by Ford AA 1½-ton tractors. These units were used in the Gates Mill tests.

Humble Oil & Refining Co. has three 1000-gallon semi-trailer tanks drawn by the Ford tractors. The Texas Co. is trying a 780-gallon tank which is drawn by a GMC 2-ton tractor at a speed of 35 miles an hour, and has ordered five more such jobs. Shell Petroleum Corp. also is turning to the lighter semi-trailer jobs.

The tests conducted here were the result of the decision of S. A. White of the National Refining Co. to try the lighter motive units for the company's tank truck business which covers most of the central states. Mr. White estimated that it would cost about $573,000 this year to replace approximately 275 tank truck jobs with the power unit alone, not considering the tanks which in most cases would be taken from discarded or traded in chasses.

He had noticed the large semi-trailer jobs that have been coming into use by oil companies in the last three years, and speculated as to the saving that could be accomplished with smaller units of the same type. He placed his ideas before Frank B. Fretter, president of the National, with an estimate that the necessary truck tractors to serve the company's needs could be bought for about $200,000, or a net saving of $373,000 on this company's 1929 transportation requirements.

Of course, it would be impossible to use any of the old tanks on the new jobs but tank and trailer men were called in and it was ascertained that tanks and trailers with light tractor units would cost only about as much as the cost of the chassis of a truck

Additional photographs of the equipment used on the truck-tractor tests described in this article will be published in the May 1 issue of National Petroleum News.

heavy enough to pack a 750-gallon tank of gasoline on its back.

While the light motive unit might be worn out in a year or two and the heavy duty truck would last five years or longer, the trailer and its tank could be used indefinitely, in most cases until it should become obsolete. The light truck tractors cost only $800 to $1200 each and the combined trailer and tank about $1400 each.

Two experimental jobs were decided on by the National, both to be drawn by Model AA Ford truck tractors. One trailer was a Fruehauff on which was mounted a 794-gallon Davis tank. The other semi-trailer was a Columbian-Whitehead & Kales frameless tank unit having a capacity in the three compartments of the main tank for 754 gallons of gasoline.

Other motor truck manufacturers wanted to get in on the National's contemplated order so Mr. White arranged to hold a test on a road near Cleveland that would give each tractor unit about as tough a job as it would ever encounter in regular duty.

The Chagrin river valley at Gates Mill was selected. There amid the estates of many of Cleveland's wealthiest families and while Col. Charles A. Lindbergh looked on from the home of Parmely Herrick, son of the late ambassador to France, six makes of truck tractors sturdily pulled pay loads weighing several times their rated capacities up two hills—one a short dirt road with a maximum grade of 15 per cent and the other paved but almost three quarters of a mile long with a maximum grade of 12½ per cent.

The six makes and their specifications were:

	Cylinders	Bore	Stroke	Gear ratio to 1	Wheelbase	Rear tires
Ford AA	4	3⅜	4¼	5 1/6	131¼	DP 30x5
				7¼		
Chevrolet	6	3 1/16	3¾	4.88	131	DP 30x5
GMC T-19	6	3 1/16	3⅞	6.83	127¾	DP 30x5
International	4	3½	4½	5.285	124	DP 30x5
				15.465		
Indiana	6	3¼	4¼	6.3	137	DP 30x5
White	6	3½	4½	5.85	138	SP 34x7

DP—Dual Pneumatic. SP—Single Pneumatics.
Ford and International had 6-speed transmissions. Others four. Chevrolet used Van Dorn rear axle.

Only two semi-trailer units were used. One was the Davis tank on a Fruehauf drop-frame semi-trailer, and the other was the Columbian tank built integrally with Whitehead & Kales trailer gear.

The Davis unit carried 794 gallons of gasoline which weighed 4922 pounds or 6.2 pounds per gallon. Its pay load was 4922 pounds. The Columbian carried 754 gallons of gasoline at 6.2 pounds per gallon or 4673 pounds. It also carried two drums of motor oil (110 gallons) which weighed 836 gallons at 7.6 pounds a gallon. The Columbian's total pay load was 5509 pounds.

These two tank jobs with their load and Ford truck tractors were officially weighed with the following results:

	Davis lbs.	Columbian lbs.
Front wheels of tractor	1740	1600
Rear wheels of tractor	5760	5500
Rear wheels of trailer	6160	5680
Rear wheels of tractor and rear wheels of trailer	11940	11200
Front wheels of tractor and rear wheels of tractor	7560	7160
Total weight	13660	12780
Pay load	4922	5509

Weights were not taken of the other units.

The Chevrolet, GMC, Indiana, International and White units all pulled the Davis-Fruehauf outfit up both hills but because of some mechanical difficulties in efforts to attach the Columbian-Whitehead & Kales trailer unit to the Indiana, International and White tractors, tests had to be abandoned for those expected hook-ups.

Included in Tables 1 and 3 are the times made by a Ford tractor which has been used in Cleveland for some time by the Atlas Tire & Rubber Co., distributor of Whitehead & Kales trailers, as a tire service outfit. The stake trailer it pulled was of the automatic type. That is, when the tractor is disengaged and pulled away, small wheeled gear at the front end of the trailer descends to the ground so that the platform of the trailer remains in a horizontal position. The descent is accompanied by the locking of brakes on the rear wheels so the trailer will not roll until the brakes have been released by a hand lever or the tractor is engaged with the trailer again.

This stake truck carried 15 drums filled with motor oil and six empty drums. Its pay load was 7420 pounds, approximately 3¾ tons, yet the tractor unit was rated to carry on its back only 1½ tons. The pulling power of the unit was 150 per cent greater than its carrying power.

Two hills and two types of road construction were picked for the tests. One hill was on the Chagrin River road near the junction of Cedar road. A course 965 feet long was selected and it was measured off by 100-foot markers for the first 900 feet and the grade of each 100-foot stretch was determined before the tests began. The roadbed was dirt, rough but dry. The road was winding.

A course 3700 feet long was marked off in 100-foot lengths on Cedar road leading out of the Chagrin river valley. It was winding but the pavement was of brick in excellent condition. The steepest part of this hill was in the second 100-foot length, a grade of 12½ per cent. The hill was steep for 1400 feet up and then leveled out for about 500 feet when the grade became very steep for the remaining 1800 feet.

Each truck tractor carried three men—the driver; C. F. Newpher, of the Bourne-Fuller Co., Cleveland, a

Table No. 1—Columbian—Whitehead & Kales Unit

HILL No. 1—Distance 965 feet Narrow Dirt Road, Winding Hill

Grades Feet	Percent	Ford Time	Ford Gear	Chevrolet Time	Chevrolet Gear	GMC Time	GMC Gear	Ford Time	Stake Gear
100	8½	9s	D1	11s	1	7s	2	11s	D1
200	9½	15s	D2	22s	1	15s	2	21s	D1
300	12	20s	D2	34s	1	22s	2	34s	D1
400	8½	30s	D2	48s	1	32s	2	45s	D1
500	6½	39s	D2	58s	1	40s	2	57s	D1
600	12	46s	D2	1m 12s	1	48s	2	1m 8s	D1
700	11	54s	D2	1m 22s	1	56s	1	1m 19s	D1
800	15	1m 4s	D1	1m 33s	1	1m 7s	1	1m 32s	D1
900	11	1m 15s	D1	1m 46s	1	1m 15s	1	1m 52s	D1
965	0	1m 22s	D1	1m 54s	1	1m 23s	1	2m 1s	D1

Table No. 2—Davis-Fruehauf Unit

HILL No. 1—Distance 965 feet, Narrow Dirt Road, Winding Hill

Grades Feet	Percent	Ford Time	Ford Gear	Chevrolet Time	Chevrolet Gear	GMC Time	GMC Gear	Indiana Time	Indiana Gear	International Time	International Gear	White Time	White Gear	Grades Feet
100	8½	14s	D1	10s	2	7s	2	9s	2	10s	2	8s	1	100
200	9½	24s	D1	20s	3	15s	2	15s	1	21s	2	13s	1	200
300	12	34s	D1	30s	2	22s	2	26s	1	35s	2	20s	1	300
400	8½	43s	D1	42s	2	31s	2	39s	1	48s	2	27s	1	400
500	6½	52s	D1	53s	2	37s	2	46s	1	1m 2s	2	35s	1	500
600	12	1m 2s	D1	1m 5s	2	45s	2	58s	1	1m 12s	2	41s	1	600
700	11	1m 10s	D1	1m 18s	2	51s	1	1m 7s	1	1m 25s	2	48s	1	700
800	15	1m 20s	D1	1m 31s	1	60s	1	1m 16s	1	1m 40s	2	55s	1	800
900	11	1m 30s	D1	1m 45s	1	1m 10s	1	1m 27s	1	1m 57s	2	1m 5s	1	900
965	0	1m 37s	D1	1m 57s	1	1m 17s	1	1m 35s	1	2m 7s	2	1m 10s	1	965

Table No. 4—Davis-Fruehauf Unit

HILL No. 2—Distance 3700 feet, Brick Pavement, Winding Hill

Grades Feet	Percent	Ford Time	Ford Gear	Chevrolet Time	Chevrolet Gear	GMC Time	GMC Gear	Indiana Time	Indiana Gear	International Time	International Gear	White Time	White Gear	Grades Feet
100	6½	10s	D1	10s	1	8s	2	9s	2	8s	2	7s	1	100
200	12½	18s	D1	16s	2	14s	2	16s	1	19s	2	12s	1	200
300	9	29s	D1	26s	2	22s	2	27s	2	33s	2	22s	1	300
400	10	...	D1	35s	2	30s	2	38s	1	43s	2	27s	1	400
500	10½	46s	D1	42s	2	37s	2	50s	1	55s	2	35s	1	500
600	10	55s	D1	52s	2	45s	2	1m	1	1m 7s	2	41s	1	600
700	11	1m 4s	D1	1m 1s	2	54s	2	1m 10s	1	1m 20s	2	48s	1	700
800	10	1m 13s	D1	1m 12s	2	1m 2s	2	1m 19s	1	1m 32s	2	55s	1	800
900	10½	1m 21s	D1	1m 21s	2	1m 11s	2	1m 27s	1	1m 43s	2	1m 2s	1	900
1000	10	1m 30s	D1	1m 33s	2	1m 16s	2	1m 36s	1	1m 55s	2	1m 8s	1	1000
1100	10	1m 39s	D1	1m 42s	2	1m 25s	2	1m 45s	1	2m 7s	2	1m 16s	1	1100
1200	9	1m 46s	D1	1m 52s	2	1m 35s	2	1m 55s	1	2m 18s	2	1m 24s	1	1200
1300	9	1m 56s	D1	2m 4s	3	1m 43s	2	2m 5s	2	2m 30s	2	1m 30s	1	1300
1400	4	2m 5s	D2	2m 13s	3	1m 50s	3	2m 12s	2	2m 40s	3	1m 37s	2	1400
1500	3	2m 14s	D2	2m 20s	3	1m 55s	3	2m 20s	3	2m 48s	3	1m 42s	2	1500
1600	2½	2m 17s	D2	2m 25s	3	2m 2s	3	2m 25s	3	2m 50s	3	1m 48s	2	1600
1700	3	2m 23s	D2	2m 31s	3	2m 7s	3	2m 30s	3	3m 1s	3	1m 55s	2	1700
1800	3½	2m 28s	D2	2m 36s	3	2m 11s	3	2m 38s	3	3m 7s	3	2m	2	1800
1900	5½	2m 32s	D2	2m 40s	3	2m 15s	3	2m 42s	3	3m 12s	3	2m 4s	2	1900
2000	6½	2m 37s	D2	2m 46s	2	2m 20s	3	2m 48s	2	3m 18s	3	2m 8s	2	2000
2100	7½	2m 42s	D2	2m 52s	2	2m 25s	2	2m 55s	2	3m 25s	2	2m 12s	2	2100
2200	8	2m 49s	D2	3m 2s	2	2m 32s	2	3m 5s	2	3m 35s	2	2m 18s	2	2200
2300	8½	2m 55s	D2	3m 8s	2	2m 38s	2	3m 15s	2	3m 45s	2	2m 25s	2	2300
2400	8½	3m 4s	D2	3m 15s	2	2m 46s	2	3m 25s	2	3m 56s	2	2m 30s	2	2400
2500	8	3m 11s	D2	3m 24s	2	2m 52s	2	3m 35s	2	4m 7s	2	2m 35s	1	2500
2600	9½	3m 18s	D2	3m 31s	2	2m 58s	2	3m 45s	2	4m 18s	2	2m 42s	1	2600
2700	10	3m 28s	D1	3m 37s	2	3m 5s	2	3m 59s	1	4m 27s	2	2m 50s	1	2700
2800	10	3m 35s	D1	3m 46s	2	3m 14s	2	4m 11s	1	4m 37s	2	2m 58s	1	2800
2900	10½	3m 55s	D1	3m 56s	2	3m 21s	2	4m 20s	1	4m 50s	2	3m 5s	1	2900
3000	10	4m 4s	D1	4m 6s	2	3m 29s	2	4m 30s	1	5m 2s	2	3m 12s	1	3000
3100	10	4m 12s	D1	4m 15s	2	3m 35s	2	4m 39s	1	5m 12s	2	3m 18s	1	3100
3200	10	4m 22s	D1	4m 25s	2	3m 43s	2	4m 48s	2	5m 25s	2	3m 25s	1	3200
3300	8½	4m 30s	D1	.....	2	3m 51s	2	4m 57s	2	5m 35s	2	3m 32s	1	3300
3400	7½	4m 38s	D1	.....	2	3m 59s	2	5m 5s	2	5m 45s	2	3m 38s	1	3400
3500	6½	4m 46s	D1	4m 45s	2	4m 4s	2	5m 15s	2	5m 55s	2	3m 42s	1	3500
3600	7	4m 55s	D1	.....	2	4m 10s	2	5m 23s	2	6m 5s	2	.....	1	3600
3700	6	5m 1s	D1	5m 5s	2	4m 16s	2	5m 30½s	2	6m 14s	2	3m 49s	1	3700

Table No. 3—Columbian—Whitehead & Kales Unit

Hill No. 2—Distance 3700 Feet, Brick Pavement, Winding Hill

Grades Feet	Percent	Ford Time	Ford Gear	Chevrolet Time	Chevrolet Gear	GMC Time	GMC Gear	Ford Time	Stake Gear
100	6½	8s	D1	8s	1	9s	1	10s	D1
200	12½	14s	D2	14s	1	14s	2	21s	D1
300	9	23s	D2	25s	1	22s	2	36s	D1
400	10	31s	D2	32s	1	30s	2	48s	D1
500	10½	37s	D2	39s	1	37s	2	1m 1s	D1
600	10	...	D2	49s	1	44s	2	1m 13s	D1
700	11	56s	D2	58s	1	50s	2	1m 26s	D1
800	10	1m 6s	D2	1m 6s	1	59s	2	1m 38s	D1
900	10½	1m 15s	D2	1m 14s	1	1m 6s	2	1m 52s	D1
1000	10	1m 25s	D2	1m 22s	1	1m 14s	2	2m 3s	D1
1100	10	1m 39s	D2	1m 32s	1	1m 20s	2	2m 16s	D1
1200	9	1m 50s	D1	1m 40s	1	1m 27s	2	2m 28s	D1
1300	9	2m 1s	D2	1m 50s	2	1m 36s	2	2m 40s	D1
1400	4	2m 9s	D2	1m 58s	2	1m 42s	3	2m 52s	D1
1500	3	2m 15s	D3	2m 4s	2	1m 46s	3	3m 3s	D2
1600	2½	2m 20s	D3	2m 9s	2	1m 52s	3	3m 12s	D2
1700	3	2m 25s	D3	2m 14s	2	1m 58s	3	3m 20s	D2
1800	3½	2m 30s	D3	2m 19s	2	2m 1s	3	3m 28s	D2
1900	5½	2m 34s	D3	2m 23s	2	2m 6s	3	3m 34s	D2
2000	6½	2m 38s	D3	2m 28s	2	2m 10s	3	3m 43s	D2
2100	7½	2m 43s	D2	2m 49s	1	2m 14s	2	3m 52s	D1
2200	8	2m 50s	D2	2m 59s	1	2m 21s	2	4m 4s	D1
2300	8½	2m 58s	D2	3m 6s	1	2m 27s	2	4m 14s	D1
2400	8½	3m 3s	D2	3m 14s	1	2m 33s	2	4m 25s	D1
2500	8	3m 11s	D2	3m 19s	1	2m 40s	2	4m 34s	D1
2600	9½	3m 17s	D2	3m 28s	1	2m 46s	2	4m 45s	D1
2700	10	3m 26s	D2	3m 34s	1	2m 53s	2	4m 57s	D1
2800	10	3m 35s	D2	3m 42s	1	3m	2	5m 10s	D1
2900	10½	3m 43s	D2	3m 50s	1	3m 7s	2	5m 22s	D1
3000	10	3m 54s	D2	3m 58s	1	3m 14s	2	5m 35s	D1
3100	10	4m 1s	D2	4m 8s	1	3m 21s	2	5m 45s	D1
3200	10	4m 11s	D2	4m 14s	1	3m 27s	2	5m 58s	D1
3300	8½	4m 20s	D2	4m 24s	1	3m 35s	2	6m 8s	D1
3400	7½	4m 27s	D2	4m 31s	1	3m 42s	2	6m 20s	D1
3500	6½	4m 35s	D3	4m 37s	1	3m 47s	2	6m 31s	D1
3600	7	.....	D3	4m 43s	1	3m 52s	2	6m 40s	D1
3700	6	4m 44s	D3	4m 50s	1	3m 59s	2	6m 50s	D1

disinterested man who acted as time keeper and referee, and W. E. Thibedeaux, assistant purchasing agent of the National Refining Co., who did the tabulating. The weight carried by the tractors was thus increased by more than 300 pounds above what would be the weight carried when the tractor and trailer units are in delivery service.

As each tractor completed its test on the two hills, the tank trailer would be removed and attached to another tractor. Nine tests with the tank trailers were run on each hill and one with the stake trailer.

The three men who conceived the idea of using a drop-frame semi-trailer with cutaway tank witnessed the tests. They are: W. E. Fletcher who was with the White Star Refining Co. of Detroit, the first user of such units; F. C. Buchanan of the Columbian Steel Tank Co. of Kansas City, and R. G. Handy, Detroit, with Whitehead & Kales, who are co-builders with the Columbian of the frameless trailer.

Among the men who were present were: Frank West, manager of the Canadian Oil Refineries, Ltd., Toronto; C. S. Smith, vice-president, and J. D. Sadler, secretary, National Refining Co.; A. W. Kennerson, Standard Oil Co. of Ohio, and the motor transportation supervisors or purchasing agents of most of the larger oil companies of northern Ohio.

Among the truck and trailer men were: Lloyd L. Tremper, vice-president of General Motors Truck Co., George Pieromoff, chief engineer, Indiana Truck Co., Marion, Ind.; H. O. Mainzinger, Whitehead & Kales, Detroit; H. L. Lowry, Davis Welding & Mfg. Co., Cincinnati; R. B. George, and C. H. Watson, Trailmobile Co., Cincinnati, and F. L. Tully and S. B. Kennerson of the Fruehauf Trailer Co.

A party of the men who witnessed the tests were the dinner guests of J. M. Mendelson, head of the Atlas company, at the Oakwood Country Club.

The tests were expected to show the oil men what could be expected of each type of equipment in the type of service the various oil companies encounter in their marketing territories. The object was not to eliminate any particular make of equipment. Some of the manufacturers have already decided on changes which they believe will mean improved performance in this new type of duty.

The National will continue its individual test of the two units during the next 30 days but under less strenuous conditions. It is planned to run the units with full loads between Cleveland and the National's refinery at Findlay. In a month each tractor will have accumulated about 7500 miles which distance is expected to show the tractor's endurance and reliability.

First Quarter Gasoline Shipment Losses Wiped Out by Okla.-Kan. Refiners

By Allen S. James
N. P. N. STAFF WRITER

TULSA, April 20

OKLAHOMA and Kansas refiners the past few weeks have been steadily recovering from the setback they experienced in gasoline business the first quarter of 1929 because of subnormal weather conditions throughout the Middle West. This fact is shown clearly in comparisons of cumulative shipments, production and crude runs for the first 15 weeks of each year.

The comparison of cumulative shipments for the 15 weeks is shown in Table No. 1. The figures from which all the accompanying tables were compiled were taken from the summaries of the weekly operations reported to NATIONAL PETROLEUM NEWS by a majority of refiners in the two districts.

The table shows that shipments the first week of 1929 were 20.1 per cent greater than for the same week in 1928. By the end of the second week of the year the weather was getting in two or three stiff wallops and the per cent of increase dropped to 11.3. This percentage increase was cut almost in half the third week and again the fourth week. The fifth week the cumulative shipments were almost on a balance for the two years, 1929 overshadowing the 1928 total by only 61,000 gallons.

A definite trend downward in shipments was shown the sixth week when the loss in 1929 as compared with 1928 was 3 per cent. This percentage loss continued to increase each week until the beginning of the tenth week, which was the one ended March 8. The percentage loss the ninth week was 6.8, and for the tenth week 5.7.

Since the tenth week, or March 8, a steady improvement in the ratio was shown with the fifteenth week; April 12, indicating this year's shipments lacked only 1.1 per cent of being even with those for the same period a year ago.

The cumulative production of gasoline for the two periods is shown in the same table. It will be seen that Oklahoma and Kansas refiners started 1929 with an increase in production of 16.6 per cent. The second week the increase moved up to 17.8 per cent, but by the end of the third week the weather had cut their shipments down and the refiners accordingly began lowering production totals. This reduction trend continued from the end of the second week to the beginning of the fourteenth week, when the increase over last year amounted to only 6.2 per cent. Production increase the fourteenth and fifteenth weeks was steady at 6.7 and 6.6 per cent respectively.

The cumulative crude runs also are shown in the table. It will be seen that crude runs started this year 15 per cent higher than at the same time in 1928, but the percentage of increase declined steadily until the twelfth week when the increase was only 1.5 per cent. The increase over last year the thirteenth week amounted to 2.3 per cent and the trend the fourteenth and fifteenth weeks was upward.

Several factors which the figures do not show must be kept in mind in interpreting the tables. It will be recalled that the first quarter of 1928 was a comparatively open winter, with the result that gasoline consumption was good for that period of the year. At the same time the refinery price of gasoline was exceedingly low, but had showed signs of moving higher. Jobbers bought both to supply current consumption and also for storage. Exporters were comparatively active although only a small amount of their business was placed in Oklahoma or Kansas prior to April 15.

This combination of factors pulled gasolines from refinery storage tanks faster than had been anticipated and at the peak of the summer demand stocks were exceedingly low and the refinery price of gasoline had moved upward several cents.

THE percentage increase in crude runs, gasoline production and shipments the first two or three weeks this year would indicate refiners anticipated another good period of demand and took the situation by the forelock and began to put more gasoline into their storage tanks. The weather crossed them up, however, both in January and February, while exporters were only mildly interested in Oklahoma and Kansas, and the refiners accordingly had to revise their operations to make the best of an abnormal situation.

The same comparative tables for the Louisiana-Arkansas refiners shows

Table No. 1

Oklahoma-Kansas Refinery Operations for First 15 Weeks of this Year Compared with 1928. Cumulative Crude Runs, Gasoline Production and Shipments. (Based on weekly operations reports to NATIONAL PETROLEUM NEWS.)

	Cumulative Crude Runs			Cumulative Gasoline Production			Cumulative Gasoline Shipments			
	1928*	1929**	Percent of Increase or Decrease	1928*	1929**	Percent of Increase or Decrease	1928*	1929**	Percent of Increase or Decrease	
1st Week	132,726	152,718	+15.0	20,300,000	23,670,000	+16.6	20,048,000	24,080,000	+20.1	1st Week
2nd Week	279,174	311,570	+11.6	42,051,000	49,519,000	+17.8	42,959,000	47,818,000	+11.3	2nd Week
3rd Week	429,670	478,818	+11.4	65,324,000	76,645,000	+17.3	64,241,000	68,016,000	+ 5.9	3rd Week
4th Week	587,296	644,542	+ 9.7	88,672,000	102,166,000	+15.2	85,949,000	88,218,000	+ 2.6	4th Week
5th Week	746,554	800,966	+ 7.3	112,057,000	128,683,000	+14.8	107,380,000	107,441,000	+ 0.1	5th Week
6th Week	902,820	950,305	+ 5.6	135,465,000	153,728,000	+13.5	131,287,000	127,364,000	— 3.0	6th Week
7th Week	1,063,126	1,101,150	+ 3.6	159,952,000	178,042,000	+11.3	152,674,000	145,828,000	— 4.5	7th Week
8th Week	1,222,527	1,260,646	+ 3.1	184,865,000	203,611,000	+10.1	175,327,000	164,823,000	— 6.0	8th Week
9th Week	1,379,856	1,411,778	+ 2.3	208,495,000	227,924,000	+ 9.3	198,592,000	185,144,000	— 6.8	9th Week
10th Week	1,540,965	1,570,209	+ 1.9	233,374,000	252,555,000	+ 8.2	220,683,000	208,135,000	— 5.7	10th Week
11th Week	1,711,496	1,738,350	+ 1.6	259,500,000	279,031,000	+ 7.5	245,465,000	232,507,000	— 5.3	11th Week
12th Week	1,884,768	1,912,632	+ 1.5	286,011,000	304,874,000	+ 6.6	270,330,000	258,919,000	— 4.2	12th Week
13th Week	2,043,492	2,090,472	+ 2.3	313,163,000	332,606,000	+ 6.2	296,419,000	286,203,000	— 3.4	13th Week
14th Week	2,208,839	2,265,604	+ 2.6	337,330,000	360,010,000	+ 6.7	321,866,000	314,083,000	— 2.4	14th Week
15th Week	2,382,224	2,450,641	+ 2.9	364,574,000	388,467,000	+ 6.6	345,884,000	341,973,000	— 1.1	15th Week

*Beginning with week ended Jan. 6. **Beginning with week ended Jan. 4.

Table No. 2

North Louisiana and Arkansas Refinery Operations for First 15 Weeks of this year Compared with 1928. Cumulative Crude Runs, Gasoline Production and Shipments. (Based on weekly operations reports to NATIONAL PETROLEUM NEWS.)

	Cumulative Crude Runs			Cumulative Gasoline Production			Cumulative Gasoline Shipments			
	1928*	1929**	Percent of Increase or Decrease	1928*	1929**	Percent of Increase or Decrease	1928*	1929**	Percent of Increase or Decrease	
1st Week	2,960,000	6,005,000	+102.9	36,327	56,969	+56.8	3,639,000	7,323,000	+101.2	1st Week
2nd Week	6,231,000	12,080,000	+93.8	72,153	115,977	+60.7	6,915,000	12,443,000	+79.9	2nd Week
3rd Week	9,863,000	17,760,000	+80.0	109,685	170,029	+55.0	10,751,000	17,633,000	+64.0	3rd Week
4th Week	13,262,000	23,047,000	+73.8	150,273	227,069	+51.1	13,827,000	22,187,000	+60.4	4th Week
5th Week	17,347,000	28,360,000	+63.5	198,223	281,614	+42.1	18,059,000	28,256,000	+56.5	5th Week
6th Week	21,277,000	33,876,000	+59.2	245,447	338,729	+38.0	22,193,000	33,543,000	+51.1	6th Week
7th Week	25,411,000	39,883,000	+56.9	294,256	398,772	+35.5	26,102,000	37,997,000	+45.6	7th Week
8th Week	29,395,000	49,457,000	+68.2	341,234	458,061	+34.2	29,292,000	44,352,000	+51.4	8th Week
9th Week	33,081,000	51,444,000	+55.5	382,508	518,454	+35.5	33,128,000	49,713,000	+50.1	9th Week
10th Week	37,395,000	57,425,000	+53.6	431,868	579,587	+34.2	36,796,000	55,155,000	+49.9	10th Week
11th Week	41,617,000	63,994,000	+53.8	479,156	646,069	+34.8	40,757,000	63,006,000	+54.6	11th Week
12th Week	45,621,000	70,709,000	+55.0	523,961	713,508	+36.1	44,882,000	70,816,000	+57.8	12th Week
13th Week	49,856,000	76,211,000	+52.9	573,089	769,260	+34.2	49,592,000	77,106,000	+55.5	13th Week
14th Week	54,567,000	81,814,000	+49.9	622,184	825,811	+32.7	54,102,000	82,580,000	+52.6	14th Week
15th Week	59,359,000	87,327,000	+47.1	671,155	890,030	+32.6	58,870,000	88,215,000	+49.8	15th Week

*Beginning with week ended Jan. 6. **Beginning with week ended Jan. 4.

they started the new year at top speed, and kept up a rapid pace for several weeks but recently slowed down somewhat.

The gasoline shipments from the Louisiana and Arkansas plants (Table No. 2) the first week of 1929 were 101.2 per cent greater than for the same week in 1928, but this percentage by the fifteenth week had dropped to 49.8.

Gasoline production the first week this year was 102.9 per cent greater than the first week of 1928 but was only 47.1 per cent greater for the fifteenth week.

Crude runs the first week were 56.8 per cent greater but were down to 32.6 per cent increase the fifteenth week.

Several factors again must be taken into consideration. The Arkansas-Louisiana refiners were not as hard hit by the weather in their south and southeastern marketing territory as were the Oklahoma and Kansas refiners in their Middle Western territory. The north Texas refiners had sizable contracts for export gasoline the first part of this year and the Louisiana refiners especially moved some of their production into eastern Texas for domestic consumption. The Arkansas and Louisiana refiners undoubtedly moved quite a bit of gasoline to northern territory, some of this business probably having been given to them after two or three Oklahoma refiners who had contracts especially in Ohio last year had declined to renew them this year on the theory that Oklahoma refiners had no business attempting to compete in a territory such as Ohio or Michigan. Two or three export orders also were placed in Arkansas early in the year.

The per cent of increase also would be relatively larger for Arkansas and Louisiana than for Kansas and Oklahoma due to the fact that the former group is only about a third as large as the latter two districts. Any increase in refinery capacity in Louisiana or Arkansas would have a decided effect on these percentages, and there was considerable construction work done in that district last summer and fall.

That the apparently whirlwind start the Louisiana and Arkansas refiners made at the beginning of the year could not continue as a sound economic policy is evidenced by a study of the tables. While their business showed a nice increase for a period the situation the past few weeks has been rapidly reaching a better balance. As the Oklahoma and Kansas refiners get into their stride the tendency naturally would be for the shipment ratio in Arkansas and Louisiana to decrease. If it should fail to show a readjustment an unhealthy situation might arise with a resultant fight for business which in turn could easily demoralize the gasoline market just at the opening of the spring and summer demand.

The cumulative shipments, production and crude runs for Texas were not compiled primarily because of the fact that since last year several West Texas plants have been included in the weekly reports. Two or three plants which formerly had been listed along with the north and central Texas group were transferred to the West Texas listing and the figures for the two years accordingly would not be comparable.

It is doubtful if the north Texas tables would reveal anything of special interest. In the early part of 1928 and 1929 north Texas refiners devoted their attentions almost exclusively to export business and only a relatively small percentage of their production found its way into the territory most seriously affected by the weather.

TULSA, April 20.—A. J. McClelland, for the past two years secretary of the Oklahoma Oil Jobbers' Association, resigned April 15. His successor has not been named. Mr. McClelland has not announced his future plans as yet.

Transcontinental Case Before High Court

WASHINGTON, April 18.—The Transcontinental Oil Co. has asked the U. S. Supreme Court to reverse the refusal of the courts to issue an injunction forbidding the Mid-Kansas Oil and Gas Co. to interfere with what the Transcontinental claims is its right to sell its half of the oil produced from leases owned jointly by the two companies in the Pecos field in Texas but operated by the Mid-Kansas.

The question is as to the meaning to be given to a contract whereby the Transcontinental claims the Mid-Kansas was to pay the bonus due the property owners and to do the necessary exploration drilling in return for a one-half interest in the leases. The contract worked satisfactorily it is declared until in 1927 when production outran the transportation facilities and the two companies failed to agree upon a plan for a pipe line. The Transcontinental built one on its own account.

In February, 1928, the Mid-Kansas claimed the sole right to sell the oil, thereby prospectively rendering the pipe line useless unless the Mid-Kansas elected to use it. The Transcontinental claims it has the option of calling on the Mid-Kansas to sell its half. It suggests that if that be not the way to construe the contract that the contract be held to be one of partnership and void because the power of the companies to make it.

The Superior Oil Co. has attacked the constitutionality of the Mississippi 4 cents gasoline excise law as applied on gasoline sold by it for delivery in Louisiana. The Supreme court of Mississippi first held with the Superior to the effect that imposition of the tax on such traffic was unconstitutional. On rehearing it held with the state, hence the appeal to the highest federal court.

Patent Club Offers Perpetual Cracking License for Lump Sum Payment

By Paul Truesdell
N. P. N. STAFF WRITER

NEW YORK

ROYALTIES charged the refiner for license to use patented cracking processes have been reduced considerably since the formation of the Patent Club in 1921.

Today the refiner has his choice of four processes embraced in the Patent Club arrangement, two of them being vapor phase and two liquid phase processes, and he has his choice of three methods of computing and paying his royalties. The four processes are:

Cross, Holmes-Manley, De Florez and Gyro. The latter two are vapor phase systems.

The other two tried and proven cracking processes in wide commercial use, the Dubbs and the Jenkins, have no connection with the patent club and have their own royalty rates and methods of computing them.

The Tube and Tank process, which was developed by the Standard Oil Co. of New Jersey and served as that company's ticket of admission to Patent Club membership, is not now offered at any royalty rate, it is stated at the offices of the Standard Oil Development Co., because the operating pressure within its licensing field—about 350 pounds—is now considered obsolete by many refiners for this type of equipment.

Refiners who install units of the tube and tank type nowadays employ the Cross process and frequently operate at 1000 to 1500 pounds pressure. This brings their operations within the scope covered by the Black patents which were acquired and are owned by the Gasoline Products Company (Cross).

The three methods of royalty payment open to the refiner are:

1—A straight charge of 35 cents a 42-gallon barrel (0.833 cents a wine gallon) on finished gasoline produced. This rate is being offered for each of the processes.

2—A charge of 20 cents a barrel on virgin stock charged to the cracking equipment. This is being offered for the Cross and Holmes-Manley process.

3—A paid up license obtained by paying a lump sum in cash, the amount varying according to the scale upon which cracking operations are carried on. Commuted royalties of this type are being offered for the Cross, Holmes-Manley and De Florez processes.

The licensors point out that it is the paid up royalty plan by which the greatest savings are possible to the refiner. By paying a little less than 3 years' royalties for the smaller volume of gasoline produced or a little less than one year's on very large output, the refiner can obtain a perpetual license.

The table of range for lump sum payments follows:

Ranges

Barrels of "cracked gasoline output" per year

100,000 to	675,000
675,000 to	1,350,000
1,350,000 to	2,025,000
2,025,000 to	3,375,000
3,375,000	upwards

Rates

Lump sum royalty per 1000 barrels of "cracked gasoline output" per year

$1,000.
900.
800.
600.
360.

Under this arrangement, a refiner producing 100,000 barrels a year of cracked gasoline could obtain a paid license for $100,000, whereas at 35 cents a barrel (0.833 cents per gallon) one year's output would demand a royalty payment of $35,000.

A refiner making 500,000 barrels could buy a paid up license for $500,000, whereas his royalties for one year at 35 cents a barrel would amount to $175,000.

A refiner producing 2,000,000 barrels a year under the paid up plan could get a permanent license for $1,600,000, while one year's royalties under the continuing payment system would cost $700,000.

For yearly output of finished gasoline of 3,375,000 barrels, paid up license could be bought for $1,215,000, while one year's royalties at 35 cents a barrel would amount to $1,181,250.

Concerning the lump sum paid up royalty plan, the license agreement forms of The Texas Co. and the Gasoline Products Co. read as follows:

"At any time the licensee may, at its option, commute the payment of future gallonage royalties for any elected specified quantity of cracked gasoline output per year from 100,000 barrels per year upwards, by paying to the licensor lump sum royalties in accordance with the accompanying schedule, it being understood that the lump sum rates indicated apply only to the particular quantities within the ranges of the maximum and minimum limits specified and that the reduced rates applicable to the upper quantity ranges become effective only when the rates indicated for the lower ranges are paid."

The agreement goes on to say:

"Such lump sum royalty payments by the licensee * * * shall constitute compensation in full * * * for the right of the licensee to produce * * * during each subsequent 12 months' period * * * the quantity of 'cracked gasoline output' covered by such lump sum payment in accordance with the preceding schedule."

If the licensee produces more than the amount specified under the lump sum payment schedule, he must pay for that at the rate of 0.833 cents a gallon, the contract provides. He gets no royalty rebate if he produces less.

CONCERNING the straight royalty per gallon basis, the contract states:

"The licensee shall pay * * * as gallonage royalties for the rights granted hereby, the sum of 0.833 cents for each gallon of 'cracked gasoline output' * * * produced by the licensee in the installation or installations constructed and operated hereunder."

Concerning the third optional royalty calculating method, the contract says:

"The licensee at its option and on 90 days written notice * * * in lieu of paying the gallonage or lump sum royalties * * * may pay as barrelage royalties for the rights hereby granted the sum of 20 cents per barrel * * * for all virgin stock charged into or treated in said installation * * * subsequent to the date of such written notice. * * * The term 'virgin stock' shall be deemed to mean oil of whatever character charged into or in the said installation * * * other than oil which has already passed through the licensed process

and on which royalties have already been paid."

Here is a little historical background of the development of the cracking patent situation.

In 1913, Dr. Burton's first patent was issued. Shortly thereafter the Standard of Indiana began to license other Standard companies to use the Burton process. The royalty charged was 25 per cent of the profits derived from use of the process.

This method had its advantages and disadvantages, both parties to these license agreements found. In the first place, when the market was good and prices of gasoline were high, the amount of royalty that the refiner had to pay was high. This went against his grain. On the other hand, when the market was weak and gasoline was sold at a small profit or a loss, the licensor got little or nothing by way of royalty and he did not like that. Also, figuring the profits and assessing the proper royalty charge was a troublesome problem.

The next change was to a flat royalty rate of 16.8 cents a barrel of oil charged to the system, the charging stock being gas oil. This worked well enough with the Burton process in which operation was comparatively simple.

In August, 1921, after the Adams patents whose application date antedated Burton's, had issued, The Texas Co. and the Standard of Indiana entered into an agreement whereby they were protected in their rights to their respective patents and assured of safety in developing their processes.

In January, 1923, the Cross interests, at the time engaged in an infringement suit brought by the Standard of New Jersey and threatened with further litigation, joined the Patent Club which meant that a part of the royalties collected from licensees of the Cross process would go to the owners of the Burton and Adams and Homles-Manley patents to buy immunity from attack.

The Standard Oil Co. of New Jersey was admitted into the Patent Club in October, 1923.

As the newer processes made headway and more and more replaced the Burton process, new operating methods were devised which made it difficult to figure cracking royalties.

The Cross process, for example, charged to its cracking units partly fresh gas oil and partly recycle stock, that is, gas oil taken off as bottoms from the tower in which the cracked distillate is fractionated.

The question arose as to whether the royalty should be based on the virgin gas oil processed or on the fresh oil and recycle stock both. There was some discussion between licensors and licensees on this point.

The present royalty rate system was first put into effect by the Gasoline Products Co. about a year ago and has since been adopted by The Texas Co. and more recently by the Gyro Process Co.

There would seem to be considerable chance for argument over royalty rates in some of the newer plants where crude oil is distilled with waste heat from the cracking process and the straight run and cracked gasoline are run in together to make a single end product. However, this has been worked out equitably for the refiner, it is stated. The crude he is running is tested for natural gasoline content and he is credited with that much gasoline.

In other words, the amount of gasoline that would be naturally obtained by skimming the crude he is running, is subtracted from the total production of his plant before the royalty is computed.

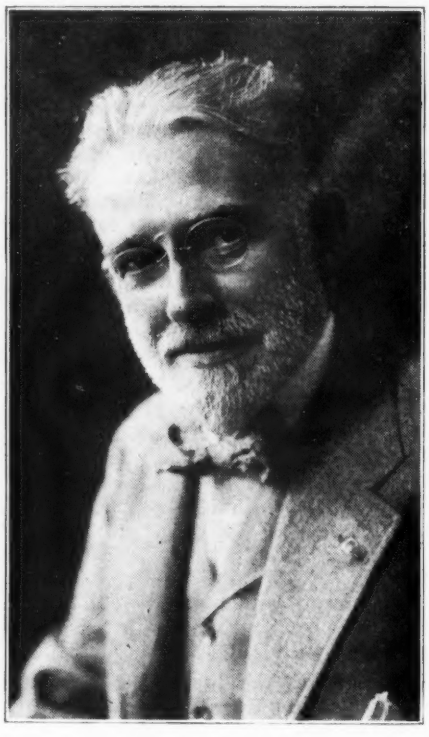
In the license agreement of The Texas Co. and the Gasoline Products Co. this is covered in the following words:

"In the event that a crude oil charging stock having a natural gasoline content * * * is charged into a unit, the licensee shall be entitled to deduct the amount of such natural gasoline from the total gasoline output upon which royalties are to be paid."

With Health Improved Doherty Renews Conservation Work

NEW YORK, April 19.—Henry L. Doherty, head of extensive petroleum and public utility interests, will continue to further efforts to establish some rational order of conservation in the oil industry, according to his business associates.

This statement was made after it became publicly known that Mr. Doherty had been married, Dec. 31 last, in Toronto, to Mrs. Grace R. Eames, widow of an official of the International Harvester Co. in European service.



Henry L. Doherty
Whose marriage in Toronto Dec. 31 last, during convalescence from two years' illness, has just been made public

Mr. Doherty at the time of his marriage was convalescing from an illness with arthritis which had confined him to a Battle Creek sanitarium for the best part of two years. Announcement of the wedding was delayed on the advice of his physicians so that he might escape messages and visits from his friends.

Mr. Doherty has been in Atlantic City the past few months and has been closely in touch with his business interests, but not active in routine matters, his associates stated. Mr. Doherty has been a pioneer in the work among leaders in the oil industry to bring about practical methods of conservation and it was said that he had maintained even a greater interest in this issue before the industry, during his illness, than in the affairs of his own companies.

It is not expected he will attend the meeting of directors of the American Petroleum Institute in New York April 24, when the institute's conservation program is to be further discussed since he is preparing for a short trip to Europe. It was said, however, that he will undoubtedly later be active in the industry's effort to bring about practical conservation.

The former Mrs. Eames was a close friend of Mrs. William T. Morrey, Mr. Doherty's sister. Their marriage was planned before Mr. Doherty's illness and Mrs. Eames went to Battle Creek with Mr. Doherty and remained there during his illness. She had spent a great deal of her life abroad and is a finished musician, studying under masters abroad.

Review of Late Production News

INCREASES of about 20,000 barrels each in Seminole and two California fields, plus substantial increases in other major fields, account for the 56,800-barrel increase in the country's total daily average output for the week ended April 20. The country's average was 2,761,850 barrels, according to the American Petroleum Institute.

Crude oil imports fell off 11,286 barrels, to 304,000 barrels the past week. Total new crude supply reached 2,975,850 barrels, a gain of 45,514 barrels over the previous week.

Next to Seminole, Santa Fe Springs made the highest gain in output during the past week. It rose 13,000 barrels on daily average. Long Beach gained 4,500 barrels.

Salt Creek went up 5250 barrels; Shackelford county 5050 barrels; Howard county 2950 barrels and Pecos county 4000 barrels.

Winkler fell off 4200 barrels.

Oklahoma-Kansas

DRILLING the Marland Production Co. No. 1 Westerfield through the Mississippi lime and into the Simpson provided the Valley Center pool of Sedgwick county with what may prove a five-mile extension to the northeast. The well, in the NW SE SW of 16-25S-1E, topped the Simpson at 3326. It is swabbing in the neighborhood of 300 barrels per day from a total depth of 3338. The new well, which offsets to the south the Marland Production Co. No. 1 Goodrich, was a hole full of water in the chat on top of the lime, the producing formation of the No. 1 Goodrich.

The Simms Oil Co. No. 1 Laster, SE NE NE of 19-6N-4E, Pottawatomie county, Okla. is considered by some as the forerunner of an important field. The discovery has maintained a steady average of 85 barrels of oil per hour since being deepened early in the week to a new total depth of 3698. Four locations have been made around the new well. Several short term leases will probably call for a lively drilling campaign in the near future.

Texas, New Mexico, Louisiana

SEVERAL important showings in wildcats featured the week's production activity of West Texas and New Mexico. The Texas Production Co., No. 1 Lynch, a semi-wildcat in Lea County, New Mexico filled up with 32 gravity oil from a pay at 3722-3731. It is estimated that the well will swab about 50 barrels per hour. It is shut down awaiting the erection of storage before further testing.

Mid-Continent Oil & Gas Co., has a good showing in its No. 1 Lackey A, Coke County, Texas wildcat in the southwest of Sec. 272 Block 1-A H and TC Survey. The test filled up 2000 feet with oil in 36 hours from a total depth of 3755 in white lime. The hole has bridged 170 feet off bottom with the well shut down to await storage. Pecos County, Texas contributed an 18,000,000 cubic feet per day gas well when the test of Perrin et al No. 1, Eaton, in Sec. 27 Block 3 came in for that amount from a total depth of 1582 feet.

California

PRODUCTION from Santa Fe Springs' deeper sands continued to be held up by failure on the part of operators to obtain successful water shut offs. The first well to be completed in the upper Clarke zone was obtained by the Rhode Oil Syndicate on the southeast flank of the Santa Fe Springs field.

There were 264 projects heading for zones below the Meyer, including 38 wells which are now standing idle after having been drilled to various depths, of these, 190 are drilling, 116 are still above or in the Buckbee or Nordstrum zones, and 73 wells below 6000 feet. Total deep zone production was 136,650 barrels, and field total was 163,820 barrels. Three wells completed in the O'Connell zone, together with several others in the zones above, gave the field a new flush production of 20,300 barrels.

Long Beach also showed an increase in production, caused by the completion of several deep zone tests.

Lawndale may pull out of it in the opinion of some operators, but the chance seems slim, as several wells failed to get a kick while swabbing. A number of production tests of streaked sands are due within the next week. It is estimated that ten million dollars may be dropped in this field, unless unexpected developments take place.

Ventura Avenue's total production was up to 58,000 barrels and several new locations have been made.

Kettleman Hills shows increased drilling activity as operators fear curtailment action.

Elwood Terrace had one important completion by the Barnsdall-Rio Grande interests for 5000 barrels of clean oil and 2,000,000 cubic feet of gas. Production tests on several other wells are expected in a day or two.

Wyoming, Montana

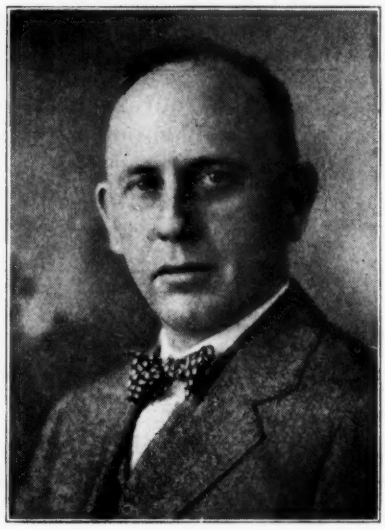
RESUMPTION of wildcat activities all through the Mountain States is noted as the spring comes on apace. The gas areas in northern Montana and southern Alberta are busy with drilling wells and equipment moving in, while the Kevin-Sunburst field has shown a great deal of renewed work and considerable new work in its unexplored areas. Pondera field continues its routine work and the wildcat structures in its vicinity are all being drilled or are preparing to start.

Operations in the Dakotas promise to be interesting, both as explorations for oil and gas. Several are already under way and more are to be started. Wyoming tests are resuming as fast as weather and roads permit, and it would seem that that state will have a few more fields to her credit by the end of the year.

Colorado work continues with an occasional new wildcat well announced for drilling by independent interests. The boom at Vineland seems to have burst, and until the Continental Oil company finishes the well it is now spudding in, the truth of the structure will remain problematical. This company has a fine showing of oil in its deep test in San Juan county, in New Mexico, but there has been no official test made yet. In Lea county operations are somewhat at a standstill, pending the final outcome of the government's conservation policy on public domain drilling.

Starting May 1st Issue

Seven Articles on West Texas Refineries



PAUL TRUESDELL

Paul Truesdell, NATIONAL PETROLEUM NEWS staff writer, has just completed a trip through the principal centers of this fast growing new refining district.

The articles he wrote while on that trip will tell something of what West Texas may mean to the refining and marketing industry of this country generally; what products are being made at plants there; what type of plants are being built; how operated and so on.

Here are the titles of these articles and the dates they will appear in NATIONAL PETROLEUM NEWS.

1—Survey of present status of refining in West Texas—characteristics of products—where they are marketed and so on—May 1

2—West Texas as a possible important source of lubricating crudes—May 8

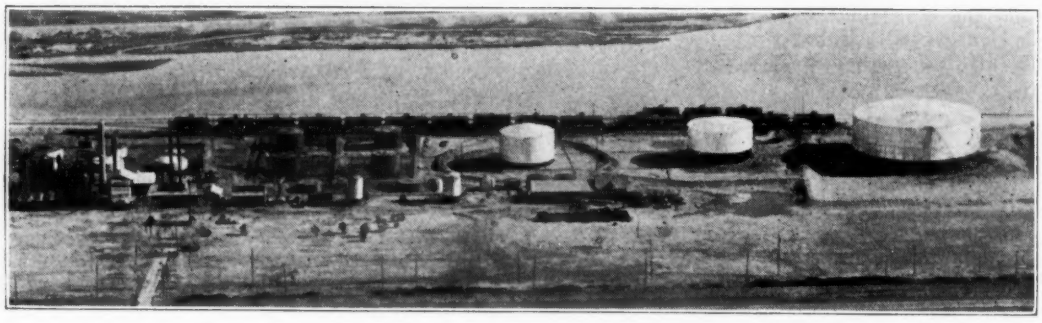
3—How Burford Oil Co. meets sulfur requirements of the trade in its gasoline—May 15

4—What a Big Springs refiner found out about the time element in treating gasoline—May 22

5—How another refiner knocks the salts out of his crude—description of a combination of skimming and light cracking in the same equipment carried on by stages—May 29

6—Operation of a custom refinery and another which makes special products from West Texas oils—June 5

7—How one refiner who started in the boom days of Burkburnett has switched to West Texas crude and is building a profitable business—June 12



Airplane view of refinery of Rio Grande Oil & Refining Co., El Paso, Texas. The Rio Grande river is directly in the rear of the plant and Mexico across the river

Operation of Gyro Process Described

A Vapor Phase Cracking Process for Making High Anti-Knock Motor Fuel from Any Grade of Crude or Charging Stock

By C. R. Wagner

Presented before National Petroleum Association, Cambridge Springs, Pa., April 25

* * * * *

THE Gyro process is a low pressure vapor phase cracking process adapted to the handling of any grade of petroleum oil and producing therefrom a motor fuel having a high anti-knock rating.

Referring to the accompanying flow sheet, the charging stock is pumped from charging stock tank (A) by means of pump (B) and delivered under approximately 100 pounds per square inch pressure to spray nozzles in the arrester (C).

At this point the cold oil issuing from the arrester sprays reduces the temperature of the hot vapors which enter the arrester from the converter (I) at approximately 1100 degrees F. The liquid from the arrester which consists of residuum from the charging stock plus any condensed materials from the converter passes by gravity to the hot oil reservoir (D).

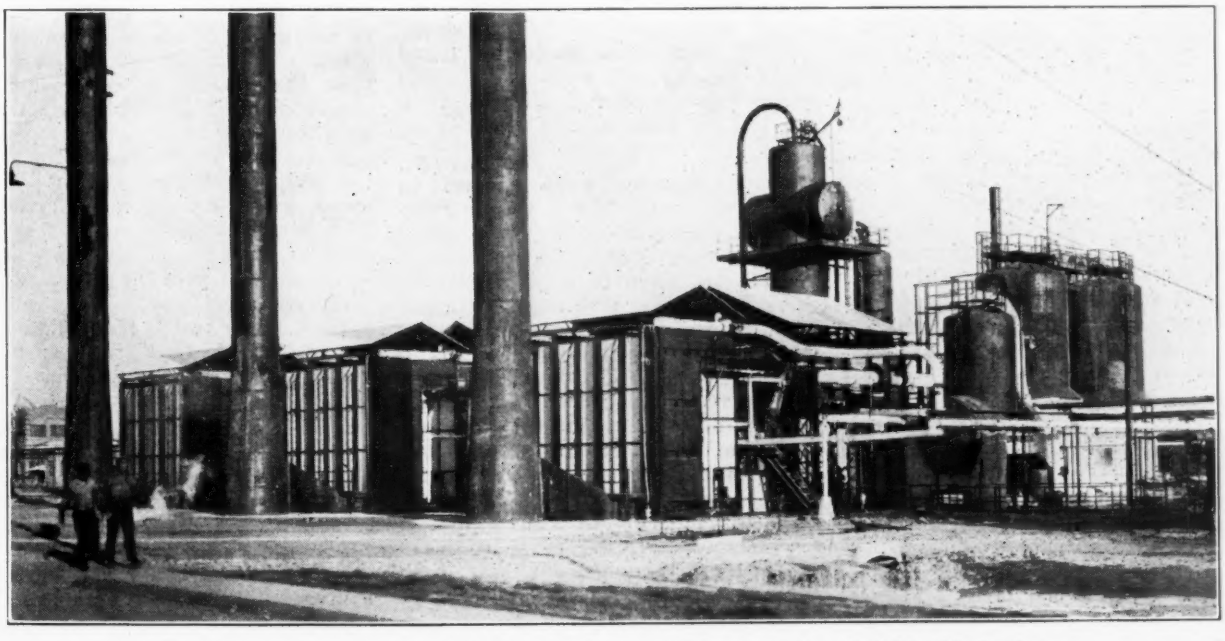
The vapors from the arrester, which consist of vaporized portions of the charging stock plus uncondensed products of the converter, pass to the fractionating tower (J). This fractionating tower is so designed that the distillate which is condensed from the vapors leaving the top of it will have a boiling range commensurate with the motor fuel desired. This boiling range is controlled by means of the refluxer (O)* which may be arranged, as shown on the flow sheet, for the production of low pressure steam. The quantity of steam produced in this manner is more than enough to operate all of the pumps used in the process and to supply all of the required process steam. The gas from the gas separator (L) is led to a compressor for the recovery of its liquefiable motor fuel content by any suitable method.

The hot oil reservoir (D) acts as a collector for all of the oil which enters the system which has not yet been converted into motor fuel or fixed gas. The hot oil pump (E) is controlled as to speed so that it will maintain a constant liquid level in the hot oil reservoir (D). The quantity of this hot oil delivered to the economizer (F) is regulated by an automatic rate of flow controller. This rate of flow is so maintained that the converter is constantly supplied with the correct quantity of vapor. The balance of this hot oil is returned to the charging stock tank (A) through either heat exchangers or coolers.

The portion of the hot oil which passes through the economizer leaves the economizer (F) at a temperature of about 700 degrees F. and enters the evaporator (G). Here the fuel oil drops out as residuum and is removed from the system through the cooling coil (Q) to the fuel oil tank (R). Superheated steam is introduced into the system through perforated coils in the bottom of this evaporator in quantity not to exceed 3 per cent by weight of the vapors produced. The vapors and steam leaving the top of the evaporator pass through separator (H) which removes particles of entrained liquid. From the separator, the dry vapors pass to the inlet of the converter (I) at a temperature of approximately 650 degrees F.

In passing through the converter the temperature of the vapors is increased to approximately 1100 degrees F. and the conversion or cracking to lighter hydrocarbons takes place at this point. In this converter the va-

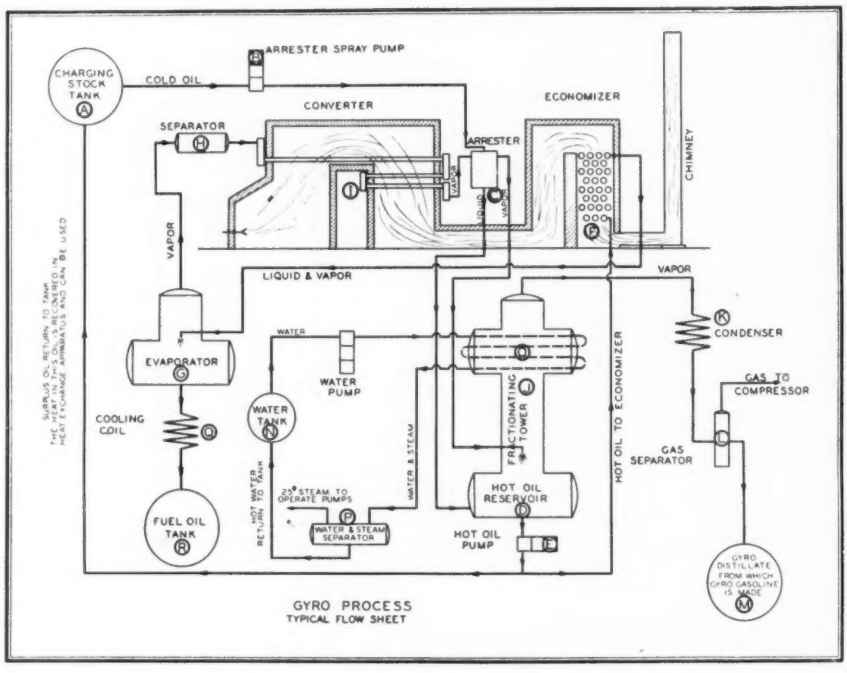
*Assistant chief chemist, Pure Oil Co.



Gyro process plant at Smith's Bluff refinery of Pure Oil Co., Smith's Bluff, Texas

pors are distributed by means of the inlet header and passed through a number of tubes in parallel. In these tubes are inserted catalytic cores. From the outlet of the converter (I) the vapors pass into the arrester (C) which was described above.

The following yields are on a volume basis and are taken from plant operating data and do not represent test run conditions. All figures represent averages for periods during which operating conditions were fairly constant, and no experimental work was in progress. Gas oil was the charging stock used in all cases.



	60 days Pennsylvania Per cent	16 days Sweet Lake	5 days Mexia
430 E.P. Distillate	55.67	52.9	52.4
Fuel Oil (10°-12° A.P.I.)	16.64	23.4	24.5
Dry Gas	30.01	25.3	25.2
Gain	2.32	1.6	2.1

The commercialization of this process of vapor phase cracking has followed rapidly on the heels of the discovery of the causes of the troubles listed above. Briefly, it was found that carbon formation was entirely due to lack of control of the cracking reaction, or to the use of excessive local temperatures. By careful regulation of the time of reaction and by designing the furnace so as to secure efficient heat transfer, the formation of carbon was rendered practically nil.

Evidence of this fact is found in the reports from units shown in the accompanying photograph which indicate that 30-day runs are fairly common occurrences. After such a run, during which gas oil may be charged at the rate of 1000 barrels per day, it is doubtful if 100 pounds of carbon could be collected from all parts of the converter. It does not seem to be too broad a statement to make therefore, to say that carbon or coke formation has definitely been eliminated.

Excessive gas production was found to be partly due to lack of control of the vapor flow in the reaction zone but more often due to failure to regulate the temperature of reaction. It was learned after many expensive lessons that a variation of 5 degrees F. in the temperature of the reaction, while maintaining all other conditions constant, would cause a wide fluctuation in the proportion between fixed gas and motor fuel.

Changes in the character of the charging stock seem to have much less influence than is the case in liquid phase cracking. Although the actual volume of fixed gas produced is still twice that made by liquid phase cracking, this extra gas is made at the expense of fuel oil production and not by reducing the quantity of motor fuel distillate made.

Heat economies were effected in three ways: 1. The hot flue gases leaving the converter (or cracking section) were led to an economizer built in the form of a pipe still and there used to vaporize the charging stock. In this way stack temperatures were brought down below 550 degrees F. 2. The converter and its furnace were designed so as to utilize to the best advantage the radiant heat from the combustion chamber, and consequently lower the temperature of the flue gases leaving the converter setting. In this way heat transfers of the order of 75,000 B.t.u. per square foot per hour have been effected.

This rate should be compared with shell still practice of 20 years ago where a rate of 500 B.t.u. per square foot per hour was considered good. 3. The heat in the vapors leaving the converter was used for rerunning of distillates, stripping of crude oil, generation of steam, or in similar ways, by the design and application of special types of heat exchangers. These economies have cut fuel bills to the point where vapor phase cracking in this respect can now be said to be proceeding pari passu with liquid phase cracking.

The problem of refining the distillate produced has proved the most difficult, a fact due almost entirely to a lack of knowledge of the subject on the part of the motoring public. Everyone can recall the complaints made in the beginning of the liquid phase cracking development that "this stuff does not smell like straight run gasoline." The aromatic, rather pleasingly fruity odor of vapor phase cracked motor fuel seems in a similar way to cause motorists concern because it does not smell like present day gasoline. For that matter, neither does a 40 per cent benzol blend.

Due to the highly unsaturated character of the hydrocarbons present in this distillate it was not an easy matter to work out a method of removing coloring matter, diolefines and highly reactive olefines without at the same time taking out a large percentage of the desirable compounds possessing high anti-knock value. At the present time, however, several methods are available for this purpose, some involving new equipment, others merely adaptations of existing methods. It can now be safely stated that methods are available which will yield at least 95 per cent of satisfactory motor fuel from end point vapor phase cracked distillate.

Any gasoline or motor fuel containing olefines, on standing exposed to the air, forms gum. The rate at which this gum forms is dependent upon the time of such exposure, the concentration of the oxygen in the atmosphere over the liquid, the percentage and kind of olefines in the liquid, the temperature, the amount of agitation given the liquid, and the extent to which actinic light or other catalyzing influences may have access to it. In this paper it is not possible to go into great detail on this important phase of the refining of vapor phase cracked distillate, but certain points require brief treatment.

Since this distillate contains 50 per cent or more of olefines, it is evident that gums should accumulate in it on standing in storage. The olefines cannot be wholly removed by treatment with acid for obvious economical reasons, nor can they be converted into saturated hydrocarbons by hydrogenation without losing the anti-knock quality of the product. It has been found, however, that when the

product is first produced it is gum free, and while in this condition can be given a certain treatment which inhibits the formation of gum even under rather severe conditions.

For example, a sample of vapor phase motor fuel thus treated was blanketed with an atmosphere of pure oxygen in a clear glass bottle and set in a north window. Another sample, not treated, was set beside it. At the end of 35 days the untreated sample showed .0447 grams of gum per 20 c.c. whereas the treated sample contained only .0064 grams per 20 c.c.

It is gratifying to note that refiners generally are alive to the faults of the old copper dish method for determining gum in motor fuels. Altogether aside from the difficulty encountered in getting check determinations, it does not give even an indication of the amount of preformed gum present. The copper dish acts as a catalyzer and the large volume of fuel to be evaporated requires such a long time for the test that most of the gum found has been formed during the test. The wide variation in results obtained makes the method of little value even in estimating the stability of a fuel.

An excellent paper on the effect of gum upon engine performance is that of Voorhees and Eisinger of the Standard Oil Co. (Indiana)[1]. The authors show very clearly that it is only preformed gum that affects engine performance, a statement borne out by the results of marketing millions of gallons of vapor phase cracked motor fuel during the last three years.

They recommend the method of Smith and Cooke[2] for the determination of preformed gum, in which 20 c.c. are evaporated from a 30 c.c. Pyrex dish of special shape in an atmosphere of steam. With very slight modifications this method has been in use for nearly three years in half a dozen laboratories widely separated, and so far appears to be giving very satisfactory results. A satisfactory method for determining potential gum has not yet been found.

The characteristics of the products produced by vapor phase cracking are worthy of more attention than can be given them here. The motor fuel produced contains no more than traces of paraffins, and these are all under the hexanes in size. When analyzed by the method of Egloff and Morrell it shows 45 to 50 per cent olefines, 40 to 45 per cent aromatics and the balance naphthenes, with paraffins wholly absent.

It is known that the dry gas contains less than 0.5 per cent of butane and isobutane, hence it seems reasonable to expect only very small quantities of the higher paraffins to be present in motor fuel. The A.P.I. gravity of the motor fuel made from a Pennsylvania gas oil runs about 54 to 55 degrees or some 8 degrees lower than the straight run product of the same distillation range. While changing the charging stock has some effect upon the character of the motor fuel, yet this influence is much less marked than in the case of liquid phase cracking.

When the operation is such as to produce the maximum quantity of distillate the finished motor fuel, apparently without regard to the character of the charging stock, has a uniformly high anti-knock value. It should be pointed out that no automobile engines on the market today have a high enough compression ratio to warrant the use of a fuel having an anti-knock rating higher than 40 to 45 per cent of benzol. By blending equal volumes of straight run gasoline and vapor phase cracked motor fuel there is produced a fuel having an anti-knock rating of 40 to 45 per cent benzol. Expressed in other words, vapor phase cracked motor fuel has a blending value of 80 to 90 per cent of the value of motor benzol. Thousands of tests on a laboratory engine and dozens of demonstrations with 4, 6 and 8-cylinder automobiles have demonstrated this statement beyond question.

The distillation range of the finished motor fuel is somewhat different than ordinary gasoline, being richer in the lower boiling fractions. This makes it unnecessary to add natural gas gasoline, as must usually be done with liquid phase cracked fuel, and therefore increases its value as a blending agent. Partly due to this greater volatility, but largely because of its aromatic character, vapor phase cracked motor fuel has a lower viscosity than ordinary gasoline. Its freezing point is considerably below minus 100 degrees F., a point of considerable value in making an aviation fuel.

A very remarkable fact, especially in view of the importance of West Texas and Venezuela production, is the relatively low sulfur content of vapor phase cracked distillate. Two examples may be cited here; in one a light recycle stock from a liquid phase cracking operation was charged to a vapor phase installation. Although this recycle stock contained 0.80 per cent sulfur, the vapor phase cracked distillate carried only 0.13 per cent sulfur.

In the other instance a Mexican gas oil containing 1.20 per cent sulfur was cracked in the vapor phase and there was found in the distillate 0.23 per cent sulfur. From these facts it would appear that marketable motor fuel may be made from high sulfur crudes more easily by vapor phase cracking than can be done with liquid phase equipment. The gas, of course, is correspondingly richer in hydrogen sulfide, since the sulfur seems to be split off in this form.

The fuel produced varies somewhat, depending upon the character of the charging stock and the nature of the nonvaporizable constituents in it. The following tests on Gyro fuel oil are taken from operating reports of the plants of The Pure Oil Co.:

Kind of Charge	Corning Gas Oil	Penn'a. Gas Oil	Mexia Gas Oil	Topped M.C. Crude	Sweet Lake Crude
Gravity, °A.P.I.	11.3	12.7	11.9	15.5	12.2
Flash, °F.	325	335	270	370	295
Vis/122, Furol	189	81	63	158	70
Pour	15	5	0	35	0
BS&W	0.5	0.3	0.2	0.35	0.4

The fixed gas produced after removal of the motor fuel content has a specific gravity of about 1.0 and a fuel value of approximately 1700 B.t.u. per cubic foot. Its composition varies little except for the H_2S content, which depends upon the sulfur content of the charging stock. The average analysis of the gas from Pennsylvania gas oil is as follows:

	Per cent
CO_2/H_2S	0.25
CO	0.15
H_2	7.00
C_2H_4	27.00
C_3H_6	16.00
C_4H_8	9.00
C_5H_{10}	1.00
Saturated hydrocarbons	39.60

It can readily be seen that this gas has excellent possibilities in the field of gas manufacture where it can be substituted for "oil gas" as an enriching agent. Plants not immediately in the vicinity of a water gas or producer gas plant could very easily liquefy the propylene-butylene fraction and ship it by tank car for such purposes, utilizing the residues for plant fuel.

Perhaps the most inviting possibilities for this gas lie in the field of chemical manufacture. One large chemical concern is already using huge quantities of it for its ethylene content. The uses for ethylene are many, and indications point to a steadily increasing demand. To list only a few of the products that may be made from this ethylene we have; acetic acid, ethyl alcohol, ethylene dichloride, ethylene glycol, pure ethylene for anaesthesia, and mustard gas, known during the war as yperite. Propylene which can be recovered here in a state of high purity can be used as a refrigerant, or may be used in the preparation of isopropyl alcohol, isopropyl acetate, acetone, and propylene glycol. * * * * *

[1]The Importance and Significance of Gum in Gasoline, by V. Voorhees and J. O. Eisinger, read before the Ninth Annual Meeting of the American Petroleum Institute at Chicago, December 7, 1928.

[2]Bur. Mines Report—Serial No. 2394 (1922)
Bur. Mines Report—Serial No. 2686 (1925)

Pricing of Inventories at Refineries

Method Suggested Which Reflects Current Value in Various Stages of Transfer and Avoids Effects of Changes in Market Prices

By Henry W. Ralph*

Presented at National Petroleum Association, Cambridge Springs, Pa., April 25

THE basis of the method explained in the accompanying article is the separation of reserve stocks, other than necessary working stocks, both of raw materials and finished goods, from the various departments and making them the property of the trading department.

Crude stocks in the possession of the production department are then inventoried at current market prices, reduced by the estimated profit of that much production and further reduced by the estimated expense required to enable possession to be passed to others.

Crude stocks in the possession of the refinery are inventoried at purchase or transfer price.

"In process" stocks inventories are based on an estimate of the expected ultimate production of finished goods from such stocks, with a percentage value given each "in process" stock and this value is further reduced by an estimate of the expense required to make the finished products.

Stocks in possession of the sales department are inventoried at the price of transfer combined with the previous inventory to obtain the running average.

Only the latter part of Mr. Ralph's paper is published here.

* * *

And now we come to the problem which is the particular problem of the majority of the members of the National Petroleum Association. How shall the inventories of finished products and in process stocks which are made from crude oil be priced each month and at the end of the fiscal year.

Those of you who are executive and accounting officers of experience; and have already faced an irate board of directors who want to know "How is it that a few months ago we showed a fine profit; and now, with the end of the year in sight, we have nothing to show for our efforts but a big loss" have an immediate answer: "It isn't so important that we know just how it is done, but be sure that it is low enough so that we do not turn a reported profit into a sickening loss in the next few months."

Former Methods Obsolete

There is one very simple method to accomplish this result use the lowest price you have had in the past five or ten years for each of the products in pricing the inventory. By doing so you will never develop from your records reliable information as to the success of your activities for current periods, but you are unlikely to have to reverse previous favorable reports.

Some years ago, particularly before the war, when the methods of the various refineries had not changed much since the time of erection of the plant, this method was reputed to have another advantage. It permitted direct comparison of the value of monthly production with preceding periods to be used as an indicator of efficiency.

Such a comparison is meaningless if the refinery operations have been changed or when dissimilar values of products are used. At its best the method will not bear careful scrutiny. In my opinion this method serves only one purpose successfully; and that is to keep the statement of earnings on the safe side. In these days it will be demonstrably well below what we know is our cost.

Let us consider another method which will give the same kind of protection, but in a less degree. This is the method which bears the stamp of government approval and may be considered to give cost. The basic idea is to calculate the cost of refined products on an apportionment according to the relative value of the net realization of products at the refinery siding. If the total value of current production is less than the sums of expenditures for raw materials, supplies, labor and indirect charges market prices are used. If in excess, then the percentage of margin between these two amounts is used to make a percentage reduction in the value of each product. By this method, too, you practically eliminate the bogey of unearned profit; and your profits will develop during the months in which you ship the products of largest value.

*Petroleum Accountant, New York.

Criticisms of Method

The usefulness of this method of pricing is marked from the standpoint of a conservative accountant. Since it reflects in inventory prices the latest realizations of products the likelihood of serious changes in relative values of products is very slight; and so the arbitary adjustments sometimes necessary to adjust prices to the market are likely to be insignificant.

Since it sets up a picture that rarely has to be disturbed subsequently it has claims to still another valuable characteristic. Its use results in the development for all organizations in the industry of a similar financial cross section, regardless of the location or the type of operation. Further it will rarely happen that at the close of a fiscal year inventory prices will require adjustment if inventories are priced in this manner as a part of the usual routine.

MY CRITICISM of the method is easily stated. When you know the actual margin that results from your operations you have a fact of sufficient value to reflect in your accounting. When you make a number of arithmetical calculations which result in a breakdown of this significant figure into meaningless parts and then incorporate these into your accounting—you have performed some needless work which nets you less than nothing.

The attempt to apply this principle to the individual inventories of an organization which maintains a large number of bulk stations and service stations so that an individual monthly profit and loss statement can be made for each unit would require the performance of a stupendous amount of work at the end of the month. Perhaps this constitutes a real reason why the oil industry has so many organizations, both large and small, which profess they find it impracticable, or too expensive, to

find out which sales units operate at a profit or a loss.

In order to explain the method which seems to me to have the main advantages and the least disadvantages it is necessary to get back to the real purpose of accounting—that of performing a service to management.

If management is to be successful in all of its activities—it must be successful, that is, earn profits in each of its activities—and that means it must earn profits in production in refining, in selling and in its trading. Success is measured in terms of dollars earned.

Must Reflect Current Value

It will be impossible to develop the amount of earnings unless we set up some method of pricing so that when commodities pass from one jurisdiction into another they are given a price which currently reflects the value at the time such change of ownership takes place.

Further, the responsibility of management covers the satisfactory coordination of all the elements of a business enterprise; and involves in particular the manipulation of purchases and sales so that, without interruption to production, manufacturing or selling, the results of unfavorable price movements will be of least effect and full advantage will be taken of favorable price movements.

Whether the result of these operations is a profit or a loss, it is important that the profit or loss which accrues to an organization from the fluctuation of prices for raw materials and finished products be isolated so that the results arising from operation of the production department or the refining department or the selling department may be judged on their own merits. Unless this is done it is very difficult to make comparisons of monthly results and built up standards of performance for each activity.

WE WILL assume that at the time that commodities pass from one of these departments to the other that equitable values are established for these commodities; and on the basis of these transfer values there is developed a profit and loss statement for each of these departments each month.

Reserve Stocks Eliminated

In order to do this we lay down the general principle that the accumulation of reserve stocks of raw materials and of finished products is a responsibility of the trading department, or of management itself; and that such reserve stocks, whether of raw materials or of finished products, whether located in the field, at the refinery or at important distributing points, are the property of the trading department.

The production department is credited at current market prices for the crude oil that passes out of its ownership; the refinery is charged at current market price for the crude that it consumes, as well as the purchased stocks that it receives; the refinery is credited at current market price for the finished commodities produced; and the sales department is charged at the current market price for commodities at the time they are shipped for them or to them.

The profit and loss statements of the production department, the refinery and the sales department are valuable indicators of the success of these departments in performing their part of the general function—that of earning profits.

In pricing the stocks that are in the possession and ownership of the production department, which are to be relatively small, we can use the current market price, reduced by the estimated profit of so much production and reduced by an estimate of the expense still required to enable possession to be passed to others. For all stocks in the possession and ownership of the refinery we can use the purchase price or the transfer price.

For "In Process" Stocks

For "in process" stocks at the refinery it is suggested that an estimate be made of the ultimate production of finished stocks that can be expected when the processing has been completed; and that on the basis of this estimate a percentage calculation be made of the value of each "in process" stock; that this value be reduced by an estimate of the expense required to make the finished products; and that this adjusted value per gallon be used to establish the value of "in process" stocks. For all stocks in the possession and ownership of the sales department it is suggested that the price of transfer be used—combining with the previous inventory to obtain the running average.

Again I would like to point out the fact that neither the production department, the refinery nor the sales department are permitted to have in possession and ownership reserve stocks which have been accumulated as the result of company policy to accumulate reserves at times of low prices. Their ownership will be limited to the quantities which are considered sufficient for continued satisfactory operation.

Is True Barometer

With this basis of pricing in effect we need to have in mind a protection against "unearned profit" or of falling prices. With the prices that have prevailed since the close of the accounting period as a gauge of values, for the decision need not be made until practically all of the accounting work has been finished, it becomes a very simple matter after making a comparison of the values developed by the running average method to decide whether an adjustment is needed. If needed, a journal entry affecting an inventory adjustment account and the profit and loss account—and all of the operating reports and statistics will remain unchanged — definite barometers of the degree of success in the various activities.

This scheme of pricing appeals to me as the most valuable—since it presents the maximum of information with the minimum of effort. Under the policy in use by nearly all organizations—"cost or market, whichever lower" at the close of the fiscal year, this method is already in use at the most critical and difficult time—when commodity prices are falling. All other systems fail if values drop too suddenly.

I DO not urge you to discard your own method of pricing: but let me urge you to develop additional helpful information by pricing at market also.

If steps outlined above are followed out the inventories that are carried by the trading department will be those that show the effect of price changes; and the inventories of other departments will be carried on a basis which closely reflects recent market prices but are primarily useful in that they enable a profit and loss statement to be built up for the production activities, the refining activities and the selling activities which reflects the result of performance complicated to only a slight degree by the vagaries of market prices.

If you have a large organization I recommend that accounting records be installed which will automatically reflect the results of the separate activities of production, refining, selling and trading. If your organization is small it is not essential that you make a radical change. Rearrange your statements of inventory and production so that it will require only a few simple calculations to determine the current result of these four activities.

After this has been done for several months I predict you will find yourselves very much more definitely concerned with the results to be expected from each activity; and in the process of developing standards of performance for each. Other steps will follow naturally as you continue your effort to find significant facts which will guide you in making decisions that lead to efficiency, economy and profit; and these will all be due to one small action on your part—to so price inventories that the information developed thereby will be of real benefit.

Comparison of Costs of Auxiliary Drives at Gasoline Plants

By Fred C. Loomis*

(Read before California Natural Gasoline Association, April 11)

AUXILIARY power in natural gasoline plants is used chiefly for the pumping of water, absorption oil and gasoline, therefore this discussion of the various types will deal with pumping.

The most common types of pumping units are the direct acting reciprocating steam pump, the non-condensing steam turbine driven pump, the electric motor driven pump and the gas engine driven pump.

The direct acting steam pump is hard to equal in the essential qualities of flexibility, simplicity and reliability, when a proper selection is made. It is, however, a very inefficient machine thermally.

The steam turbine and centrifugal pump are well suited to each other and combine to form an efficient, flexible compact unit and development of the turbine has made this type of drive quite economical. The economy is most apparent in larger sizes and when using higher steam pressures. The steam turbine gives a great factor of safety for overloads and is flexible in that its speed can be easily altered by adjusting the governor.

The electric motor is the simplest driver for both centrifugal and power-driven displacement pumps. The motor must be selected properly for the pump drive, because it will not stand a continuous overload without deteriorating and if selected too large, power will be payed for that is not used;—this of course only where power is purchased on motoring rating. The extreme simplicity and absence of fire hazard make the squirrel-cage motor most desirable for gasoline plant work, although the slip-ring motor may be necessary from the standpoint of low starting current.

The gas engine, chiefly due to its low operating cost is a very desirable driver. A gas engine should be so selected that its power demand does not exceed 90 per cent of its rated power. For gasoline plant auxiliary work it is probably more economical in the long run not to exceed an 80 per cent load factor. Gas engines are not very flexible as to speed variations, but are very adaptable to various types of pump drives, it being feasible to direct connect through geared transmissions, to drive line-shafts from which any combination of pumps may be belted, or to drive pumps directly from engine by belts.

Costs of Various Drives Compared

	Reciprocating Steam Pump Assumed Steam Consumption 112 lb. /H.P. hr.	Steam Turbine Assumed Steam Consumption 50 lb./B.H.P. hr.	Elect. Motor Assumed as 90% Eff.	Gas Engine 80% Load Factor Assumed fuel consumption 14 cu. ft. per B.H.P. hr.
Installation cost per B.H.P.	$150.00	$138.00	$50.00	$170.00
Fuel { Gas @ 8c per M.....	9.50	3.90	.....	.85
Fuel { Elect. @ 1c per K.W. hr.	.....	.....	6.00	.....
Lub. Oil @ 30c gal.....	.....	.02	.02	.30
Steam cyl. oil @ 40c gal.....	.10	.....	.....	.....
Water @ ½c per bbl.	1.13	.46	.....	.10
Interest @ 6%	.75	.69	.25	.85
Repairs & Supplies	1.00	.75	.10	1.00
Depreciation on basis of 15 yrs. life	.83	.77	.27	.94
Total oper. cost per B.H.P. per month	13.31	6.59	6.64	4.04

Any comparison of these types of drivers, with a view to selecting the type with the greatest overall economy, involves more than the mathematically computed cost of operation summated from the items of fuel, lubricating oil, water, interest, repairs, operating labor, etc. There are irreducible items such as,—standby charge, salvage value, training and experience of the operating organization with the various types, etc.

Even the more or less tangible items attributing to cost are not definitely known in many cases. How much does our fuel gas cost? We may know today, but will we know what it will be worth in the same field in a year or even six months from now? What will be the repair costs of a particular installation?—and by this I mean the material and labor costs necessary to maintain the equipment in 100 per cent condition? We may have accurate records of costs for some type of drivers, but we do not know how efficient our operating and repair crews will be with a different type.

There is so much data, influencing a choice, which cannot be reduced to dollars and cents and so much that varies with our ever changing conditions that it is impossible to generalize and definitely say that any one type is the most economical.

The data and assumptions on which the comparison of the types of drivers above mentioned is based are taken as far as possible from actual installations and operating records, and an attempt has been made to make the figures constitute an average. There are undoubtedly some plants operating with greater economy than here indicated, but it is not always possible to maintain the conditions that give the auxiliary equipment its greatest economy.

The costs in the table are for one brake horsepower for one month delivered by the power part of the pumping units, and are based on the following premises.

The units on which the costs are based are of a size that would deliver about 60 B.H.P.

Operating labor has been omitted because it would probably be about equal for all types.

Gas fuel has been taken as costing 8c per 100 cubic feet.

Electric current at 1c per K.W. Hr.

Lubricating oil is taken as costing 30c per gallon; steam cylinder oil at 40c per gallon.

Water is taken as costing ½c per barrel.

Interest on investment is taken at 6 per cent annually on complete installation cost.

Depreciation is based on a life of fifteen years or 6 2/3 per cent annually. This might better be called an

*Engineer of design, Standard Gasoline Co.

obsolescence figure since our repair costs are considered as maintaining the unit in first class shape.

The installation costs for the direct acting steam pumps and turbines includes the necessary boiler plant, piping, foundations, housing, etc. For the electric motor driven pumps it includes foundation, housing, necessary switches and wiring but does not include the transformers or pole line to property. For the gas engine unit it includes foundations, piping, necessary cooling system, air starting system, etc.

The fuel costs are based on the steam consumption shown with the boiler plant considered as using 1.5 M cubic feet gas for every 1000 pounds of steam generated.

The costs for the steam units are based on no utilization of the exhaust steam.

In order to arrive at a cost figure for steam units when exhaust steam is used in the strippers, several typical plants were checked over to determine the average ratio of steam required in strippers for efficient stripping, to the amount of oil circulated.

Around 160 pounds of steam per 1000 gallons of oil circulated should be sufficient.

Also the ratio of operating auxiliary B.H.P. to oil circulation was averaged and found to run around .22 B.H.P. for every 1000 gallons of oil circulated per day.

Using these figures we see that an absorption plant with an oil circulation of 4500 gallons per day would require total auxiliary equipment developing 1 B.H.P. per hour, and would require the use of 720 pounds of steam per day in the strippers for denuding this amount of oil. This amounts to 30 pounds of steam per hour per B.H.P. of auxiliaries that can be economically utilized from the exhaust.

The increased steam consumption of direct acting pumps and even steam turbines per B.H.P. hour is generally more than this amount when steam pressures of around 125 pounds gauge and lack pressures of 30-pound gauge are used. Therefore under these conditions it would be uneconomical to operate the total auxiliary installation with a back pressure on exhaust so that the steam might be used for distillation. Steam economy would be noted, however, by utilizing the exhaust from enough of the pumps to meet stripper requirements.

With larger units, say 150 to 200 B.H.P. and steam pressures of 200 pounds or more, marked economies are possible with turbine drive.

From this comparison the following more or less general conclusions may be drawn.

The gas engine drive is desirable in permanent, long-lived installations because of its low operating cost. It is desirable where gas is valuable because of its low fuel consumption. It probably requires a better trained and more experienced operating organization than the other types if its greatest economy is to be realized.

The steam turbine drive is desirable if fuel cost is low. It is desirable in large installations using high steam pressures, for the economy is much greater under these conditions. It is desirable if the use of exhaust steam is economical and desirable.

The electric motor drive is desirable for temporary or uncertain installaitons, for its low first cost and high salvage value will offset its relatively high operating cost. If gas is very valuable the electric motor can often equal the other types in operating cost. The reliability of the power service must be considered.

Direct acting steam pumps are desirable if fuel cost is negligible and desired capacities are uncertain. Their simplicity, reliability and capacity range make them appreciated if conditions are unsettled and if the operating organization is inexperienced.

Combinations of types are desirable in many cases and will show good overall economics. For instance the use of gas engine or turbine driven units to take care of the known permanent or long-lived capacity with electric motor or steam pumps to handle the excess loads and take care of the peak or flushed periods. Or the use of gas engine units for the steady loads and turbine or steam pumps for the varying loads.

In conclusion it must again be said that it is practically impossible to make any general statements as to the correct auxiliary installation. This discussion may indicate, however, some of the points to be considered when planning such installations.

Oil Papers on Chemical Society Program

CLEVELAND, April 19.—The program for the spring meeting of the petroleum division of the American Chemical Society, which will be held in Columbus, O. during the week of April 29-May 3, is given below. J. Bennett Hill, Atlantic Refining Co., Philadelphia, is chairman:

E. D. Ries, Pennsylvania State College, "The Relation Between Physical Characteristics and Lubricating Values of Petroleum Oils."

S. W. Ferris, H. C. Cowles, Jr., and L. M. Henderson, Atlantic Refining Co., "The Composition of Paraffin Wax."

S. C. Lind and George Glockler, "Chemical Effect of Electrical Discharge on Gaseous Hydrocarbons."

B. T. Brooks, "The Polymerization of Unsaturated Hydrocarbons."

H. C. Allen, "Analyses of Some Natural Gases Before and After Treatment."

Wallace J. Murray, "A Study of the Compression of Refinery and Casinghead Gases."

R. C. Griffin, "The Determination of Sulfur in Petroleum Oils."

A. E. Wood and William Mattox, "A Modification of the Lamp Method for the Determination of Total Sulfur in Petroleum Distillates."

Dr. George G. Brown and Emory M. Skinner, "Motor Fuel Volatility."

L. B. Hitchcock, "Gasoline Volatility Surveyed by Distillation Data."

L. M. Henderson, S. W. Ferris and M. J. M. McIlvain, Atlantic Refining Co., "Specific Heats of Mineral Oils."

W. H. Bahlke and W. B. Kay, "Specific Heats of Petroleum Vapors."

H. R. Berry, Edison H. Smith and F. R. Lang, "Determination of the Specific Gravity of Asphalt by Means of a Hydrometer."

J. Morrell and W. F. Faragher, Universal Oil Products Co., Chicago, "Cracking of Tar from Cannel Coal" and "Cracking of Gas Tar."

Hydrogenation Discussion With Germans Ended

NEW YORK, April 20.—A group of directors of the I. G. Farbenindustrie of Germany who have been in the United States for several weeks consulting with officers of the Standard Oil Co. of New Jersey, have sailed for Germany.

At the offices of the Standard of New Jersey it was stated that the negotiations were directed toward effecting a broader working arrangement between the two companies in hydrogenation processes for the production of synthetic gasoline from coal.

For two years experimental work has been going on under the terms of an understanding reached between the American and German companies. Final agreement will depend, it is said, upon a further examination of legal questions and other points. Substantial progress has been made toward a working plan, it is said.

Those representing the Farbenindustrie in the negotiations are: Professor Carl Bosch, managing director; Dr. Herman Schmitz, financial director; Dr. Wilhelm Gaus, technical director and Dr. August von Knieriem, legal director.

CHICAGO, April 20.—Mr. A. H. Eisler, who has been connected with the American Petroleum Co.'s Chicago office for the past 2½ years, resigned on April 13 to accept a position with the Standard Fuel and Furnace Oil Co. of Chicago. Mr. M. W. Hamley succeeds Mr. Eisler at the American Petroleum Co.

Public Opinion Endorses Industry's Efforts at Conservation

THE oil industry's efforts to find some means by which greater conservation of petroleum can be brought about bears the stamp of approval of public opinion as reflected in editorial columns of newspapers the country over.

NATIONAL PETROLEUM NEWS herewith publishes excerpts, sufficient in each case to show the tenor of the editorial, taken from a large number published after the American Petroleum Institute program began to receive public attention.

In only a few cases is the fear expressed that such restrictions on production as the industry proposes will affect prices.

Several bring out the fact that the federal anti-trust laws, drawn many years ago, are not now working to the best interests of the public as far as the oil industry is concerned, and also other industries dealing in natural resources.

In at least one case the parallel was pointed out of the government working in the interests of the farming industry to keep down production and bring reasonable prices for farm products, and on the other hand finding itself unable to endorse the industry's program to conserve an irreplaceable natural resource.

"IT IS encouraging to note that the leaders of the oil industry do not admit defeat in the struggle to find a plan for conserving oil and stabilizing its production and distribution, despite the opinion of Attorney General Mitchell which prevents final acceptance of the program tentatively adopted by the Petroleum Institute. With the confidence born of the knowledge that their objective is worthy and has the endorsement in principle of the Federal Oil Conservation Board, some of them have asserted that the search for a formula of conservation and stabilization that will not conflict with the anti-trust laws will be steadily pressed."—*Providence, R. I. Journal*, April 6.

* * *

"It is true that, if an agreement in restriction of production be manifestly in the interests of the public, the United States Supreme Court, in a suit involving the issue, would apply the well-known rule of reason and refuse to interfere. But the oil producers do not care to invite protracted lawsuits, and the federal department of justice might feel constrained to challenge a nationwide agreement to limit production of oil for a given period. It might fear that such an agreement would serve as a precedent for other and less meritorious combinations in restraint of trade."—*Chicago, Ill. Daily News*, April 5.

* * *

"A huge factor in farm relief, as in oil production, is to keep the supply somewhere equal to the demand. We cannot force other nations to buy our surplus farm products at a price higher than they have to pay in other markets. We may maintain prices at home through crop storage, high tariff, ample credit and other expedients, but we cannot create a market beyond normal demand.

"Overproduction is one cause of farm conditions. Overproduction likewise is the cause of present difficulties in the oil business. To date the excess supply has not been reflected in wide-spread lower prices, but with continued overproduction that will come. "No one begrudges paying a fair price for gasoline and oil. Overproduction in the former represents labor performed without adequate compensation. Overproduction in oil represents not only unprofitable operation but a deplorable waste of a natural resource that in time to come may be more precious than rubies or gold."—*Watertown, (N. Y.) Standard*, April 6.

* * *

"The probable trend of the next four years will be toward unprecedented industrial combinations making for monopolistic conditions. The elimination of waste through unreasoning competition while protecting the people against exploitation is one of the big problems of the next few years."—*New York Evening World*, March 29.

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"These plans (American Petroleum Institute program) are in harmony with the recently announced policy of the United States government. Soon after President Hoover moved into the White House he stated that reserve oil fields would be closed and no more leases would be made. A movement calculated to conserve the natural resources of the country is not incompatible with public good, nor should such a movement be held prejudicial under the anti-trust l a w."—*Christian Science Monitor*, Boston, Mass., April 3.

* * *

"Yet, if the object to be gained is for the welfare of the industry and the country as well, effort to find a procedure to bring about the desired result should not be abandoned. There remains the way of voluntary cooperation of corporations and individuals. The American Petroleum Institute is said to include 90 per cent of the production. If each member through free will does a bit less drilling, the end will be gained and no law will be violated."—*Jamestown, N. Y. Post*, April 6.

* * *

"With this huge surplus already piled up, present production is adding to it. While fears might be expressed as to the effect on the price of gasoline of thus holding down production, more fears should be expressed as to the financial burden assumed by the oil industry in taking care of its vast accumulation of above ground reserves. This cost is, of course, passed on down the line, and is paid for by the consumer.

"If the Department of Justice finds that an agreement to curb production conflicts with laws, there should be and there will be ways to change those laws to meet a condition where voluntary action, not conspiracy in restraint of trade, but cooperation in restraint of waste, is necessary and desirable in the interest of the public."—*Washington Star*, March 31.

* * *

"In this dilemma the public and the industry look hopefully to Mr. Hoover. He is an engineer; he knows about mineral deposits; he has been on the Federal Oil Board and he should be able to find means to prevent waste and monopoly as well."—*New York Times*, April 6.

* * *

"Yet it is recognized by most citi-

zens acquainted with the petroleum situation, that some steps to check the great waste and overproduction now in process are highly important and desirable. Even if it should become necessary to put some technical 'restraint' upon trade to bring this about, there would seem to be justification for doing it in view of the necessity to conserve an essential and exhaustible natural resource."—*Greenville, (S. C.) News*, March 31.

* * *

"While it is true that a nation-wide arrangement for the conservation of the oil resources of the country would probably bring about enhancement of the retail price to consumers, nevertheless there is merit in the proposal of the Petroleum Institute. If exploitation continues at its present rate, the country will within a comparatively short period be denuded of its oil resources. Aside from this, the keen competition among the oil distributing companies is the best curb on excessive prices."—*Brooklyn, (N. Y.) Citizen*, April 3.

* * *

"If a nation is not willing to have its natural resources like fuel wasted and lost, it really has to face the alternative of taking complete control itself of those resources or of not only permitting but compelling private industry to adopt policies calculated to conserve."—*Des Moines (Iowa) Register*, April 4.

* * *

"The oil conservation movement thus appears to be definitely limited. Federal control of oil is likely to be restricted to the public lands. President Hoover has urged that the operators and state officials cooperate in effecting intrastate agreements to curtail the output, which would be legal. But it might be difficult to obtain uniform restrictions throughout the country under such a plan."—*Philadelphia Public Ledger*, April 4.

* * *

"Thus, the federal government, which has a deep interest in oil conservation, stands as the obstacle in the path of the oil industry leaders. It is expected that they will make another attempt to win their point. The question may have to go to the supreme court for an interpretation of 'restraint of trade' when the admitted primary object is not exploitation or unreasonable profit, but conservation for the benefit of this and future generations."—*Indianapolis, News*, April 6.

* * *

"Control of the oil industry is so highly centralized that conservation may easily degenerate into monopoly. That is the real source of the difficulty. With the power to say how much oil shall be produced goes the power to say how much the consumer shall pay for it, since prices must in the last analysis be governed by available supplies. It is a highly complicated situation, of which the controlling factor seems to be the price the consumer can pay without upsetting the economic balance. Nobody has attempted to say what that price should be."—*Galveston (Tex.) News*, March 31.

* * *

"If state land laws could be so modified that an oil field would be operated as a unit, with the returns shared among the various owners of the surface, these owners or lessees would probably not dump their oil on the market in a time of glut. This has been advocated but so far nothing effective has been done. Constitutional changes would probably be required before such a plan could be made effective."—*Albany Knickerbocker*, Albany, N. Y., April 6.

* * *

"Thus even the ultimate consumers, if far-sighted, may approve this agreement of the oil barons, rather than condemn it as the machination of a colossal trust. Primarily, of course, the purpose is to improve the oil industry, but the whole world gains through the elimination of waste, and regulations looking toward that end, if intelligently applied, are for the common good, as well as for the benefit of the few. Waste may impoverish the wasteful, without being helpful to others."—*Oklahoma City Times*, March 29.

* * *

"Often of late the cry for 'business men in politics' has been heard. It now appears that when business men of none-too-disinterested character set out 'to fix things up,' they should understand that ours is a government not of men—not even, it might be added, of members of the American Petroleum Institute—but essentially and emphatically a government of laws, and should take pains to find out, even if only in rudimentary fashion, what these laws are."—*Birmingham (Ala.) News*, April 3.

* * *

"It means that, before much can be accomplished along the line proposed by the Institute, some Congressional action may be necessary. This is just as well. While the conservation of oil is desirable, it is quite as important that in the process the consuming public shall not be gouged through a monopolistic combination. Such may not have been the purpose of the producers. The point is that the plan might easily make it possible."—*New York Evening World*, April 5.

* * *

"The logical way out of the difficulty might appear to lie through legislation amending the anti-trust laws, to allow production-controlling agreements. The Webb-Pomerene law is an example of such governmental sanction, as it applies to exports. But the government shies at price-fixing agreements, and control of production implies control of prices. The oil men may work through the states, obtaining the cooperation of state regulatory bodies, to control production. But whether this will result in anything more valuable than a gesture in the right direction remains to be seen."—*Washington Star*, April 4.

* * *

"Something may be accomplished under state laws by regulation of drilling, but the difficulties of securing the assent of state governments to a policy involving stoppage of a source of large revenues are obvious. There is also discussion of appeal to congress to amend the Sherman and Clayton acts in so far as they affect protection of oil deposits. But there has been no suggestion as to how the approval of congress to the proposal could be had without accompanying legislation for regulation of the industry—in effect, Government price fixing—of which the new Administration stands in great fear. It remains, then, to be determined whether the industry has reached an impasse in the matter."—*Baltimore, (Md.) Sun*, April 5.

* * *

"The public has indorsed the president's conservationist attitude toward oil leasing on the public domain despite the fact that it may aid 'oil' companies to maintain prices. That same public would protest against Government aid for gentlemen's agreements."—*Louisville, (Ky.) Times*, April 5.

* * *

"When America's oil is being released from the earth in quantities which establish a record, while oil in other countries is being conserved for the future, and when this overproduction is accompanied by inevitable waste and discouragement of the development of more economical methods of using oil, it behooves not only the American oil industry, but the

What Newspapers Said in Conservation Issue

American people and the president himself, to urge the limitation of oil production."—*Star-Telegram*, Fort Worth, Tex., April 6.

* * *

"Producers themselves must act to meet this condition. There is no reason why oil should be taken out of the ground today and sold at less than cost, when in a few years from now we shall be suffering for the want of sufficient supplies. It is not in the public interest that oil should be wasted. A little self-restraint and common sense upon the part of the producers will accomplish all that needs to be done, without infringement of the law."—*Youngstown, (O.) Vindicator*, April 4.

* * *

"As Mark Sullivan points out, if industry 'wants to end the inconveniences of unrestricted competition it must, as a first step, submit itself to government regulation.' The oil men do not want regulation, for that naturally would lead to measures for the protection of the public in the matter of prices."—*News*, Buffalo, N. Y., April 5.

* * *

"Whether this curtailment would govern prices is a question which was of grave interest to the public. The oil-buying public will quickly agree that any conservation program of this sort would better be mapped out by the government than by the heads of oil companies. There is no doubt that the majority of the big oil men are honest and patriotic men, but there have been a few whose names are set down in recent history as 'something else again.' It would not be satisfactory to the American public for the oil companies banded together under a new name, to direct the oil conservation program."—*Memphis, (Tenn.) Evening Appeal*, April 4.

* * *

"Can oil operators voluntarily agree to limit oil production to the rate of consumption and not be guilty of restraining trade? Would not this restriction result in an oil monopoly and a price-fixing as a necessary consequence?

"But not alone would the oil industry be involved. Coal operators have been advised to close some of their mines, discharge a certain quota of their workers and limit their product to the demands of a market, the seasonal time of which and the amount of the demand no one can forecast. They have been told to do this in order that competition and price-cutting will be eliminated, the business stabilized, and of course prices maintained at a level which will yield a profit on investment and operation. Now the aim of the proposal is beneficial and to the extent it may be, would be commendable; but under the terms of the Sherman and Clayton anti-trust acts could such a thing be done, supposing there were not other reasons that would prevent accomplishment?"—*Mail*, Charleston, W. Va., March 30.

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"The oil-conservation movement has not reached a dead end. But its effectiveness depends largely upon the rather uncertain factors involved in developing uniform oil-curtailment programs in the various states."—*Public Ledger*, Philadelphia, April 7.

* * *

"The plans of the Petroleum Institute, world wide in their range, are snagged. Consumers of gasoline and kerosene may breathe easier. For they have full confidence that no financial or industrial combination is strong enough to swerve Herbert Hoover from what he regards as the path of rectitude."—*Democrat Chronicle*, Rochester, N. Y., April 6.

* * *

"Regulation of oil production in private fields, to prevent waste and overproduction, is badly needed. The government should lend every legitimate assistance by way of advice and expert counsel. It should give all the cooperation possible for the sake of the conservation of oil that would be promoted. But the actual workings of the plan should rest on state laws, enacted by those states immediately concerned. Any attempt to found this conservation on federal legal sanction might make the government sponsor for whatever price was maintained. That is a pitfall to be avoided."—*Milwaukee, (Wis.) Journal*, April 4.

* * *

"Uncle Sam would not be setting a very good example to line up a mighty program contrary to the anti-trust laws which he so vigorously prosecutes, but at the same time there is no denying the fact that some sort of action should be formulated to prevent the useless waste of petroleum by speculators who are here today, drain the earth of the golden fluid and then move on tomorrow."—*Greenville, (Tex.) Banner*, March 30.

* * *

"Government control over the source of supply of this or any other commodity is by no means desirable, yet the issue is so vital to the nation as a whole that the government cannot ignore a certain responsibility to expedite the effective husbanding of what oil remains."—*North Adams, (Mass.) Transcript*, April 4.

* * *

"It is a matter in which the government rightly may interest itself, but not for the reason it appears is back of the oil men's request for government assistance. The government could not consistently, after having refused the same thing to farmers, through defeat of the McNary-Haugen bill, restrict the output of oil for the sake of increasing the price and thus improving the earnings of oil producers. A better reason, however, is at hand. It is that of preventing waste of a natural resource, a commodity necessary to modern industry."—*Los Angeles, (Cal.) Express*, March 11.

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"The problem is one delicately balanced between preservation of the Nation's oil supply and the public's right to equitable gasoline prices."—*Pontiac, Mich. Daily Press*, April 4.

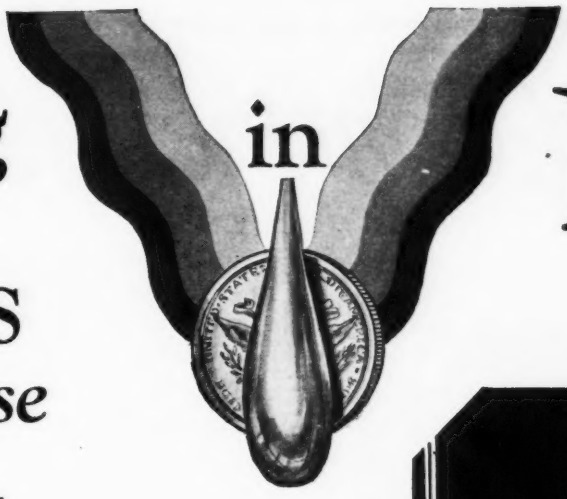
* * *

"If the program is dependent on state assistance, however, we doubt if much will be accomplished. Certainly it would need more unity of action than the states usually display. State governments realize the importance of oil conservation, no doubt, but few states would be willing to limit production unless sure of proportional limitation in other states. That is being demonstrated quite clearly by the protests of states in which government oil land is located against the Hoover conservation policy. Oil means wealth to the locality in which it is produced. Most of the oil states levy a tax on production, and limitation of production would mean loss of revenue."—*Galveston, (Tex.) News*, April 5.

* * *

"The administration is faced with an ugly knot to untangle. Of course, waste is unpardonable, but it is to be hoped that it will not sacrifice present consumers for future generations which may find it cheaper to manufacture motor fuels than pump what is left of the oil supply from the ground."—*Lincoln, (Nebr.) Journal*, April 8.

The Saving in LEAKS PAYS *for these*



SOFT-CLOSING *Wheaton Loading Valves*

You want a loading valve that is *soft-closing* and *self-closing*—a loading valve that prevents costly leaks, overflows and fires. And that is what these two *Wheaton* Loading Valves *do!*

They are *counterbalanced*, and that assures a *slow, soft, gentle* closing action—prevents vibrations and shocks—lengthens the life of the *pipe line* and the life of the *valve* itself.

They are *self-closing*—the instant the handle is released the valve *shuts tight.* There is no danger of overflows—no loss of gasoline—no matter *how careless* the operator.

These two Wheaton Loading Valves—Type 25 for the *effluent* end, Type 26 for *mid-line*—are saving gasoline and *money* wherever they are used. Their first cost is practically their *only* cost, and that is *returned*—returned *many times over*—with day-in-and-day-out *saving* and *safety*

EASY-SWINGING *Wheaton Swing Joints*

Wheaton Swing Joints function with such ease and smoothness that *strains* are practically eliminated—*leaks* are reduced to a *minimum.* And they *continue* to swing smoothly, *continue* to reduce strains and leaks, *continue* to *save money*—long after ordinary swing joints have gone into the junk heap. Unequalled in *fit* and *finish*, Wheaton Swing Joints are ALL BRONZE—*tough, tempered, long-lasting* bronze, which *neither crystallizes nor corrodes.*

—*and in addition*

ALL-BRONZE Wheaton Fittings are the *longest lasting*

[Send for samples of Wheaton Loading Valves and Swing Joints. Give them a 30 or 60 days' trial. Make them *prove* their superiority—their *saving.* If you are not entirely satisfied, you may return them for credit or refund.]

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FAUCETS · VALVES · JOINTS · COUPLINGS · FILLERS · NOZZLES · FITTINGS

IT HAS been the ambition of Owner W. G. Skelly, of Station KVOO, Tulsa, to broaden the scope of radio service. He has had in mind throughout that more than mere entertainment could be provided. Thus, announcements that are of interest to more than a few people are made, as of meetings, conventions, etc.

In the opinion of many, one of the best bits of community service is that given in the weekly talks by Capt. Louis Lefko, of the Tulsa Better Business Bureau. Each Monday evening he tells of shady practices indulged in by unscrupulous merchants, advises on how to avoid them, warns of gyp artists operating in Tulsa or on their way here. It all makes for the protection of the citizen's purse.

Capt. Lefko recently talked on used car merchandising and suggested several things a prospective purchaser should investigate. He told this story: A used car dealer advertised a bargain, saying it had run only 5,000 miles. The first prospect went into the dealer's office indignantly.

"What do you mean, advertising this car with 5,000 miles?" he said. "The speedometer says it has gone 15,000."

"Oh, devil take those boys," said the dealer. "I told them to set that speedometer back; we always make our cars live up to our ads."

* * *

Miss Gladys Comer, for the past three years secretary to W. B. Hassett, president of the Imperial Refineries, Tulsa, and Gregg Dahlen, accountant for Independent Oil & Gas Co., Tulsa, were married March 30.

* * *

D. H. Wallace, vice-president of Wallace, Muller & Co., Ltd., of New York, spent several days in Tulsa recently in connection with his company's petroleum export business. The visit was the first by Mr. Wallace to Tulsa in four years. His first visit was made in the month of August, one of those occasional hot Augusts. He readily agreed his visit was considerably more pleasant than his former one.

* * *

E. S. Pratt, of the geological staff of the Shell Petroleum Corp., has been transferred from Ponca City to Wichita. He heads the department at the latter place. Shell maintains five other geologists in Wichita and with core drilling and other investigatorial work is giving the Sunflower state a heavy play.

* * *

George H. Norton, formerly with the Gypsy Oil Co. at Wichita, is a member of the geological staff of the Atlantic Oil Producing Co., Tulsa.

* * *

Oklahoma City's "most valuable citizen for 1928," Charles E. Carter, has been made a vice-president and director of the Equitable Royalty Corp. Mr. Carter was in charge of land matters in the Oklahoma City district for the Indian Territory Illuminating Oil Co. when it and the Foster Petroleum Corp. leased thousands of acres in the present play there. The Equitable Royalty has, among other directors, James O'Neill Bruen, of Kansas City, an experienced oil and gas man.

* * *

Directors of the International Petroleum Exposition are beginning their labors on the 1929 show, Oct. 5-12 inclusive. An executive committee consisting of A. W. Leonard, D. D. Wertzberger, J. Burr Gibbons, Frank J. Hinderliter and Alf Heggem will presently appoint a manager. General plans will be sent out to prospective exhibitors soon. Already a number of manufacturers have inquired about space.

* * *

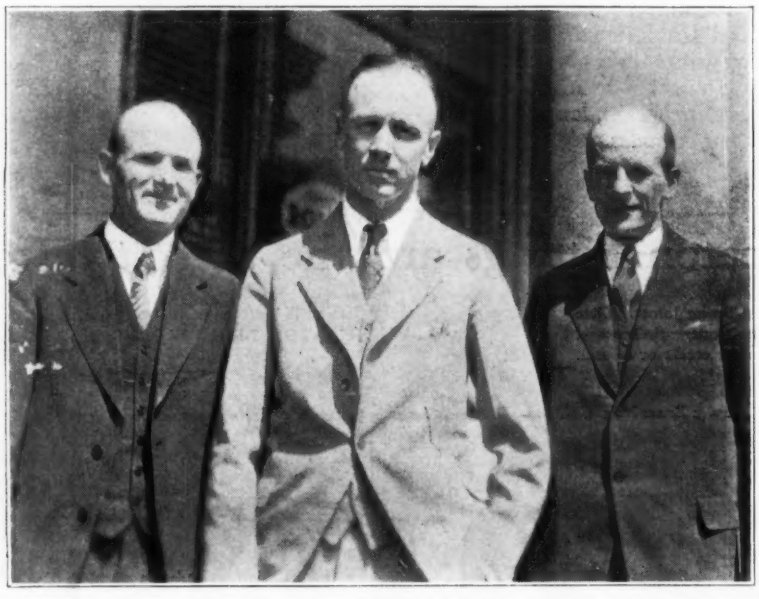
Died: Lee Wilson, 51 years old, in Wichita Falls. He was president of the Eureka Drilling Co. Two sons survive him.

* * *

E. W. Marland Co., Inc., a recently organized producing company, has applied for permission in Oklahoma to sell up to one million dollars in common stock, par value, of $10. The total capitalization of 500,000 shares and of this amount Mr. Marland has taken 50,000.

* * *

Robert P. Brewer, banker, has resigned as chairman of the board of the First National Bank of Tulsa and will go to New York as vice-president of the Chatham & Phenix National Bank. He will have charge of west-



Three Californians who figure prominently in the conservation activities of that state. Left to right, Earl Wagy, economist for the Standard Oil Co. of California; T. E. Swigart, production engineer for the Shell Co. of California, and Reed Bush, state oil and gas supervisor

ern business for that institution. Waite Phillips, oil man, regarded as the largest stockholder of the First National, now is chairman. Mr. Brewer is highly popular in the oil industry of the Mid-Continent. He has participated in many of the big financial transactions of the industry.

* * *

Headlines are funny things, sometimes. This one, for instance, from the **Tulsa Tribune:**

Effectiveness of
Sunday Shutdown
Plan Demonstrated
Josh Cosden Completes
6,000-Barrel Gusher
in Earlsboro Pool

* * *

An analysis of impeachments in Oklahoma and in Louisiana reveals one outstanding blunder committed alike by Jack Walton and Henry Johnston, governors of Oklahoma and Huey P. Long, now facing trial in Louisiana. All were prone to settle things by calling the militia. Out in this country, where a bigger fuss is still made over Thomas Jefferson than over any other national figure, nothing seems to rile the populace more than use of armed force.

* * *

Citation for gallantry in action came recently to Don P. Coleman, geologist for the Indian Territory Illuminating Co., more than 10 years late. While a sergeant in the 139th infantry, 35th division, he led an attack on a machine gun nest, capturing the gun and six men. Mr. Coleman has been with the I.T.I.O. since 1924.

* * *

Ten Years Ago

(From National Petroleum News, April 23, 1919.)

Burk-Waggoner Oil Co.'s discovery well in the northwest extension of the Burkburnett field making between 3,000 and 5,000 barrels.

Prairie Oil & Gas Co. sues to restrain a promotion company from using the name Texas Prairie Oil & Gas Co.

First National Bank of Tulsa moves into its new building at Fourth and Main streets.

Surveys being made by United Producers Pipe Line Co. (now subsidiary of Transcontinental Oil Co.) for eight-inch line, Ranger district to Fort Worth, to supply Baltic Refining Co. and Evans-Thwing refineries at Fort Worth.

Texhoma Oil & Refining Co. (now Continental Oil) buys Fisher-Gilliland refinery at Wichita Falls.

Sheldon Clark, vice-president of Sinclair Refining Co., absent from Chicago offices on trip to South America.

Midwest Refining Co. buys 51 per cent stock interest in Western States Oil & Land Co., (now a part of Argo Oil Co.)

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THERMOPYRE

High Temperature
Portable Indicator

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The TYCOS THERMOPYRE will enable the driller to maintain a more uniform condition in his furnace and thereby subject the bit or drill to a more uniform and consistent heat treatment throughout the drilling period.

The TYCOS THERMOPYRE has a net weight of 4½ lbs. and will stand much hard use. It simplicity and portability makes it the most practical instrument for oil field applications.

Write to us for additional information concerning TYCOS instruments for the oil industry.

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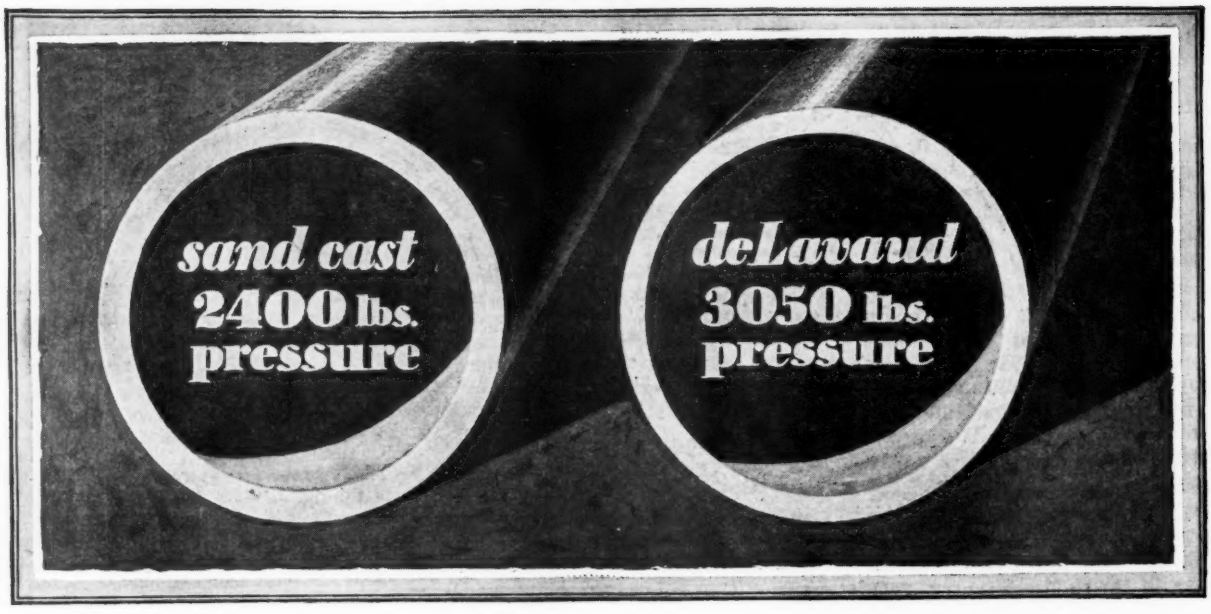
KEEP PURE DRINKING WATER ALWAYS HANDY

It *takes* 25% greater pressure to burst deLavaud pipe



THE above illustration shows the relative thickness of deLavaud and sand cast pipe. Both have the same outside diameter but deLavaud has the larger inside diameter and therefore, increased carrying capacity. *Yet this thinner deLavaud pipe is at least 25% stronger than any other cast iron pipe.*

In hydraulic bursting tests, deLavaud withstands more than 3000 pounds pressure per square inch—over 25% higher reading on the gauge than "sand cast" pipe attains. This remarkable ability of deLavaud pipe to withstand internal pressure results from the dense, close-grained structure of the metal itself, and freedom from slag and gas bubbles.

deLavaud pipe is made by pouring the molten iron into a rapidly revolving cylindrical mould. Centrifugal force holds the molten metal against the sides of the mould, and drives impurities out of the metal *with a pressure 40 times greater than gravity.*

In addition to its greater strength and uniformity, deLavaud offers greater carrying capacity than other pipe, size for size.

Cast iron pipe made by this Company bears the "Q-check" trademark of The Cast Iron Pipe Research Association.

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Valley Center Field Gets Extension; Oklahoma May Have New Pool

By John Power
N. P. N. STAFF WRITER

TULSA, April 20

BOTH Oklahoma and Kansas witnessed the completion of important wells during the past week. What may easily prove to be another major pool has been opened by the Simms Oil Co. No. 1 Laster, in the SE NE NE of 19-6N-4E, southeastern Pottawatomie county.* The well has been flowing steadily all week at the rate of about 85 barrels hour from the Viola lime and the top of the Simpson. No water has made its appearance, the production coming as steady as a clock, the daily gages varying little from 2100 barrels.

Kansas, where the Valley Center pool is causing more activity than this state has seen for many a day, had the pleasant experience of seeing what was apparently a dismal failure prove a four mile extension of its pet pool. The Marland Production Co. No. 1 Westerfield, NW SE SW of 16-25S-1E, is good for about 250 barrels per day in the Simpson, the same formation as that from which the Valley Center pool is producing.

The well, a south offset to the Marland's No. 1 Goodrich, which was a big producer in a chat pay on top of the Mississippi lime, was a hole full of water in the chat. The failure of the well to produce in this formation made it appear that the area around the Goodrich would turn out to be one of those one well pools.

Now, however, that the No. 1 Westerfield has been drilled through the Mississippi lime to the lower pay, found from 3326 to 3338 feet, the entire aspect of the pool has been changed. It appears that a considerable area, stretching northeast for about five miles from the discovery wells on the Wright farm in 12-26S-1W, may reasonably be expected to produce.

About three weeks ago the Phillips Petroleum Co. completed a well in the SW NE of 6-26S-1E, for about 600 barrels initial production in the Simpson. The Phillips well lies almost directly between the best part of Valley Center pool and the Marland's No. 1 Westerfield.

The production from the wells in this northeastern extension may not prove to be as imposing as in the original part of the field, but it is reasonable to expect that the area will eventually produce a lot of oil. The Simpson wells which have been favorably situated structurally in the Valley Center pool have held up extremely well.

Leases in the direction of the extension are held in normal sized tracts, a fact which will prevent the mad drilling such as has accompanied the townsite play around Valley Center.

The extension to the Valley Center pool was not the only important completion recorded in Sedgwick county, during the week, however. Shell Petroleum Corp. brought in two wildcats, one in the pay below the Mississippi lime, and one in chat on top of the lime. Both wells are separated from the Valley Center pool by dry holes, indicating that they may be the forerunners of separate pools, rather than extensions to the present field.

The first, and apparently the larger of the two is the Shell's No. 1 Lygrisse, SE SE NE of 15-26S-2E, four miles east and a little south of the Valley Center pool. Topping the Simpson at 3164 feet, the well is shut in at a total depth of 3166 feet. The well, which scout reports estimate as good for as much as 1500 barrels initial production, is said to be spraying out through a leaky master gate.

J. Fred Darby

President of the Darby Petroleum Corp. which is taking over the Tidal-Osage Oil Co. as noted in the April 17 issue

A little more than 12 miles south of the Valley Center pool and separated from it by some dry holes in both the chat and Simpson formations Shell Petroleum Corp., et al. completed another wildcat in the No. 1 Robbins NW SW 21-28S-1E. The well which came in flowing about 300 barrels per day in hourly heads is now swabbing about 270 barrels per day with the swab run every six hours. No water has made its appearance.

Returning to Oklahoma and the Simms Oil Co. producer in 19-6-4. This well had been making about 15 barrels per hour from the Viola lime topped at 3640, and drilled to 2684. When drilled deeper to the present total depth of 3698 feet, the well started off at the rate of 85 barrels per hour, an average it has maintained throughout the week. Of more importance than the increase in production is the fact that the last few feet drilled contained a very considerable amount of sand. It is probable that this sand is the Simpson, which is in turn underlaid by the Wilcox. The action of the well is such that some are inclined to believe that it is already in the Wilcox.

CONSIDERABLE trading in leases and royalties is underway around the well. The Tom Slick Oil Co. (Mr. Slick's new organization) is the biggest holder of acreage and royalties. A deal with the Wrightsman Petroleum Corp. gave Mr. Slick's company an interest in more than 400 acres in the township, while leases held jointly with the Prairie give the "King of Wildcatters" still more possible locations.

Three wells have been started to the extent that four locations have been made and material ordered. One is a direct east offset to the discovery well, being in the SW NW NW of 20-6-4. one a quarter mile northeast of the discovery. A Simms location in the SW of 17-6-4, and one offsetting this last location to the west, being another Simms location in the SE of 18-6-4. A deal with the Amerada Petroleum Corp. has given Mr. Slick an interest in acreage a quarter mile south of the discovery, and a location has been made

*See map, page 48, April 17, 1929 issue.

on this tract, being in the NE NE SE of 19-6-4.

Another area in "Pott" county which is coming in for a good play is that around the Magnolia Petroleum Co. No. 1 Latimer, the new well in the SE SW NW of 17-7-4, some eleven miles north and one a little east of the Simms discovery. The Magnolia's well, which is producing from either the base of the Simpson or the top of the Wilcox, is making about 1300 barrels daily on the gas lift. Prairie Oil & Gas Co. has made a location a quarter east of the well, in the SE NE of 17-7-4, and Warner & Quinlan have one in the NE SE of Sec. 18.

One of Oklahoma's liveliest spots is the Gilcrease-Cromwell sand play along the southeast edge of the Little River pool. Several excellent wells have been completed in the area recently. Both gas and oil have been found in rather startling quantities, as typified by The Texas Co.-Independent Oil & Gas Co. No. 2 Hotulke, SE of 22-7-6, which came in week before last for better than 200 barrels an hour from the sand at 3137 to 3151.

During the past week most of the completions were gassers of a size sufficient to make their drilling well worth while. Typical of these wells was the Gypsy Oil Co. No. 1 Denmark, in the NW SW SE of 11-7-6, and old well plugged back. The casing was ripped at 3325 feet, the well started off making 38 million cubic feet of gas per day, with a rock pressure of 1200 pounds.

A couple of miles south of this well Carter Oil Co. No. 1 Factor, SE NW of 26-7-6 was shot with five quarts in the Gilcrease sand, resulting in a gas production of 9 million cubic feet per day. The No. 2 well on the same lease, in the SE NE NE of Sec. 17, is making 20 million cubic feet of gas from a total depth of 3250 feet.

The Oklahoma City pool added another gas well to its roster during the week, being the Indian Territory Illuminating Oil Co. No. 1 Bodine, center of the NW SE of 24-11-3W. Nine-inch casing was set on top of the sand at 4866. After drilling the plug, the well started gassing at the rate of 70 million cubic feet per day from a streak in the sand at 4872 to 4877. The rock pressure is reported as being 1735 pounds. Production from the discovery well April 20 was 3362 barrels of oil and 285 barrels of water.

* * *

Notes On the Week

American Refining Co. has a Viola lime well swabbing about 250 barrels per day in the NE SW of 19-5-5, northwestern Pontotoc county. The well, which is still drilling in the Viola at 2465, topped that formation at 2380.

R. M. McCalley

Newly appointed manager of the Forrest E. Gilmore Co., at Tulsa, who formerly was superintendent of distribution for the Portland Gas & Coke Co., Portland, Ore.

* * *

A show of oil is reported in the Gilcrease sand in a wildcat being drilled in Pottawatomie county by the Superior Oil Corp. The test, which is in the NE NW NW of 13-8-4, had the Gilcrease at 3915-30.

* * *

Russell county, Kansas, has a wildcat showing for a well in the Liggett et al. No. 1 Burham, NE of 20-11S-15W. Top of the pay is 3157, with the well making about five barrels an hour from a total depth of 3165. The test is being rigged up to swab.

* * *

The Marland Production Co. No. 2 Goodrich, north offset to that company's discovery well in 16-25S-1E, Sedgwick county, has a good show of oil in the chat from which the No. 1 Goodrich is producing. Top of the chat is reported at 3004, with the pay from 3036 to 3038. The well filled up 1500 feet with oil in an hour and a half. The south offset to the No. 1 Goodrich was the Marland's No. 1 Westerfield, a dry hole in the chat.

* * *

Shell Petroleum Corp. No. 1 Haury, NE SW SE of 11-23S-2W, Sedgwick county, has been deepened into an oil well. The well, which had had an initial production of 20 million cubic feet of gas per day has been deepened to a total depth of 3045, with the well making about 160 barrels of oil per day.

* * *

Potential production of the Seminole district, as established by open flow test for 24 hours, 7 a.m. April 15 to 7 a.m. April 16, totaled 463,198 barrels. This is a slight gain over the open flow total of 15 days earlier, this being 462,257 barrels. The umpire fixed 25 per cent as the deduction for all fields, explaining that the Maud, Mission, Carr City and St. Louis pools have declined to the point where their decline curves now are similar to the older pools of the area.

* * *

Milmac Oil Co., Tulsa, has taken over from the Austin Oil Corp. the well being drilled in the SW SW SW of 17-26S-5W, Reno county, Kans. The well was taken over at depth of 1425 feet and is to be drilled to 4100 feet. Roy Austin will remain in immediate charge of the well.

New Mexico Has Unit Development Law

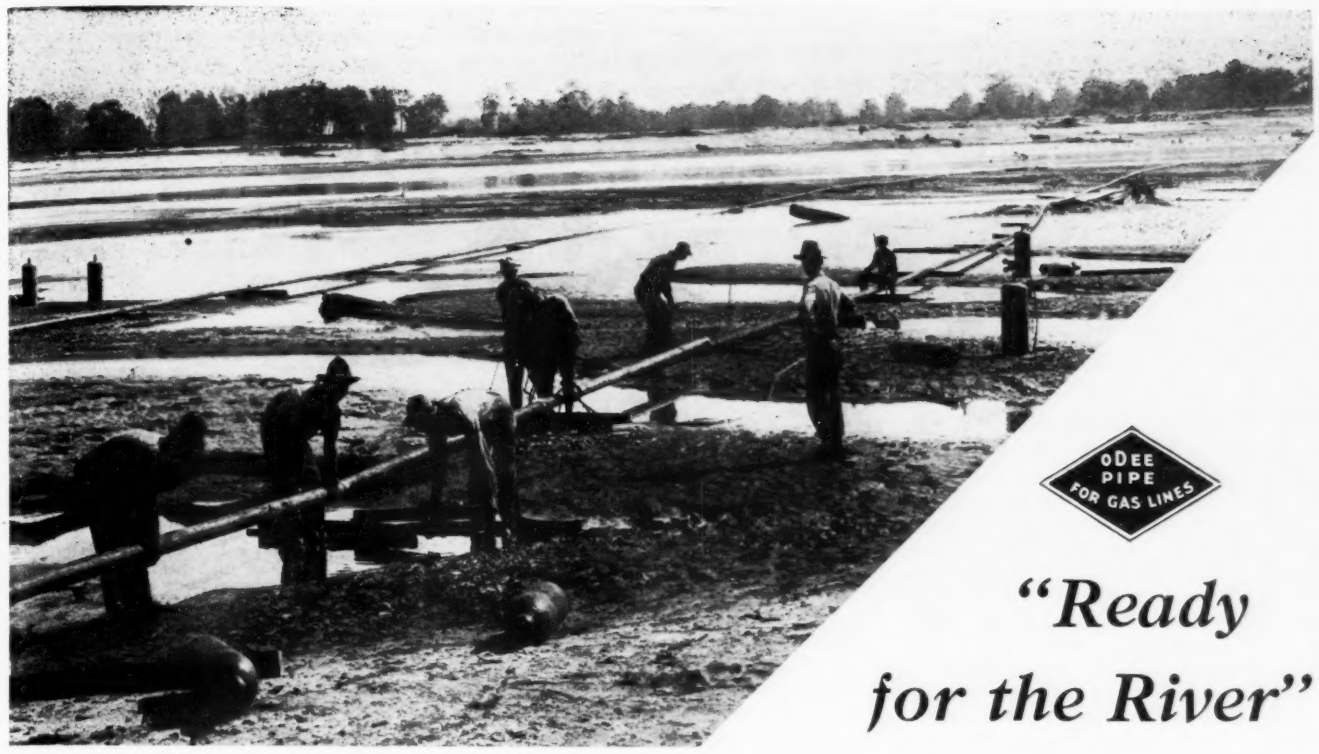
TULSA, April 20.—Recent legislation in New Mexico on unit development will mark little advance in this direction, as operators have elsewhere been doing for years what this bill authorizes. At the same time, the bill is of the character recommended by an A. P. I. committee in 1927, being of the permissive type.

The New Mexico law, which is now in effect, is short. Its first paragraph authorizes operators on the same geologic structure to enter into agreements for the development of the pool as a unit, or to cooperate in the development of all or any part of the structure, provided the agreement is approved by the state geologist. Expressly, it is asserted that such agreements shall not be held to be a violation of any state laws.

Section two of the act authorizes the commissioner of public lands to enter into agreements on behalf of the state, where the state owns mineral title to lands included in unit development plans.

R. A. Birk, formerly of the Amerada Petroleum Corp., is now consulting geologist to the Bridwell Oil Co., at Wichita Falls.

Phillip S. Schoeneck, district geologist of Atlantic Oil Producing Co., in the eastern part of the west Texas Permian salt basin producing province, makes headquarters at Big Spring, Howard county. His offices are in the Lester Fisher building.



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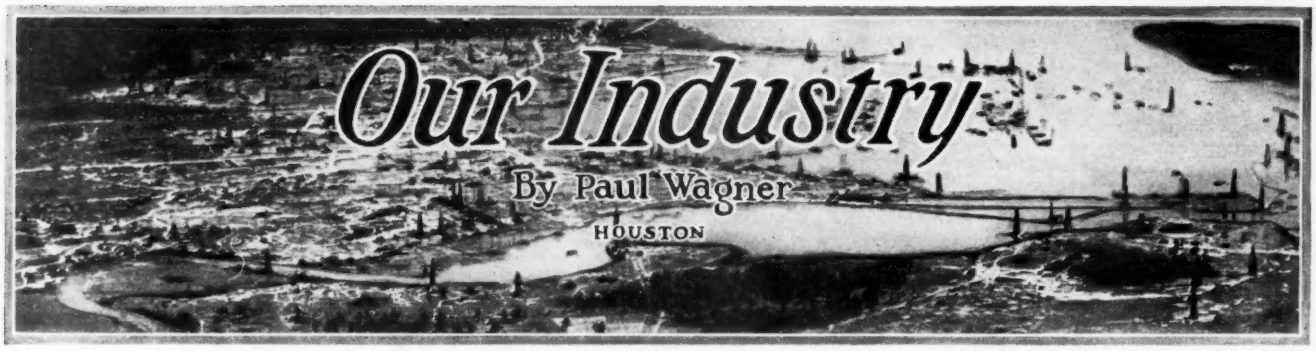


THE recent election of W. E. (Steve) Dunlap to the directorate of Richfield Oil Co., Los Angeles, represents another recognition of engineering training for executive positions. Along with his activity on the board of directors Mr. Dunlap will continue to guide the destinies of the Richfield production department. He was assistant production manager until the recent resignation of John McKeon to engage in business for himself. Now he is production manager, succeeding Mr. McKeon.

Changes in the Richfield's producing organization include the appointment of L. S. Cox to be general field superintendent, in charge of all divisions. He was formerly southern division field superintendent. H. A. Brand of Long Beach succeeded Mr. Cox in the southern division.

* * *

J. H. (Jack) Curran, foreman of mechanics at the Oleum refinery of Union Oil Co. of California, Los Angeles, now wears two rubies in his service emblem. He completed 20 years with the company early in February. George P. Grim, one of the oldest drillers in the Union's service, is also wearing a new 20-year pin.

* * *

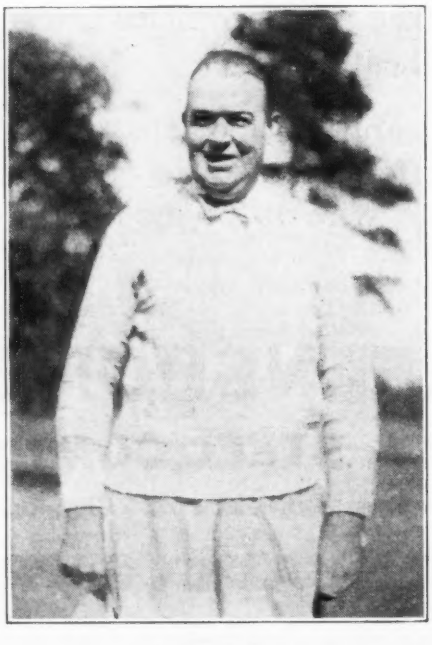
In the year 1929 the cost of operation and maintenance of the Associated Oil Co.'s fleet, George D. Zeh, manager of marine department, will approximate $2,600,000. Of that total, actual operation and maintenance will require $1,800,000; the remainder will classify under depreciation, insurance, overhead, improvements and so forth. The marine department as such receives no earnings, but as one unit of the company makes every effort to keep down costs in a general program of reducing expenses to a minimum consistent with efficiency. Five of the Associated's eight seagoing vessels are engaged in moving crude and fuel oil to Pacific coast points and the Hawaiian Islands; one transports gasoline from the Martinez refinery, on San Francisco bay, to receiving stations up and down the Pacific coast; two others are regularly engaged in transporting gasoline in Intercoastal traffic through the Panama Canal to the Atlantic Seaboard.

* * *

Two members of a famous oil family are shown in an accompanying snapshot recently taken at the Dallas factory of the Guiberson Corp., manufacturers of drilling and production equipment. They are N. G. Guiberson, at the left, who lives at Dallas and who long has been an active figure in southwestern manufacturing; and S. A. ("Al") Guiberson, Jr., Los Angeles, president of the corporation and also an individual oil producer. A third brother, W. R. (Dick) Guiberson, is active in the corporation's affairs. R. S. Haseltine, who married a sister of the Guiberson brothers, is vice president and general manager. He is temporarily in California, where he is reported satisfactorily recovering from a serious illness.

* * *

Royalty owners in the Shreveport district have formed a state association to be affiliated with the general Mid-Continent organization headed by E. W. Marland as president. The Louisiana Royalty Owners Association, which will function as a division of the larger organization, elected A. B. Carmody of Shreveport president; Frank B. Treat of Minden, vice president; J. B. Wemple of Shreveport, secretary-treasurer. The board of directors consists of these men and John Y. Snyder, new president of the American Association of Petroleum Geologists; John H. Tucker, A. J. Hodges, M. J. Derryberry, Ray O'Brien, A. H. Southern and S. L. Beene of Mayesville.



J. P. Gahan

* * *

W. R. Borough, formerly of Tulsa, is now superintendent of the Sunburst works of The Texas Co., better known as the International Refining Co., in Toole county, Montana, nine miles south of the Canadian border. The International plant was built by the O'Neil Brothers in 1922 and taken over in August, 1926 by the California Petroleum Corp. In November, 1928, it was transferred to The Texas Co., as a part of the program by which it absorbed California Petroleum Corp. W. H. Hoffman is general superintendent, dividing his time among the Craig, Cody, Casper and Sunburst plants. He was formerly of Pryse, Ky.

* * *

Foremen's Safety committees in the General Petroleum Corp., Los Angeles, have been reorganized along departmental lines in the interest of more effective results. Regular meetings of committees are held, the general procedure being as follows: The superintendent in charge acts as chairman. Foremen present are given an opportunity to exchange experiences, discussing accidents which occurred in previous months and submitting suggestions on unsafe conditions or practices noted by them or reported by workers. These suggestions are either approved or rejected by the committee. Suggestions offered at meetings are recorded and then referred to other departments in which similar hazards exist.

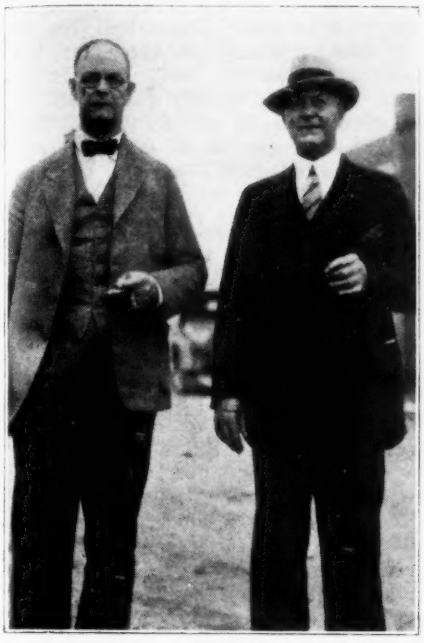
Departmental Safety committees already organized include:

Production department: R. D. Bane, Safety inspector; construction division, J. W. Templeton, chairman; producing, Los Angeles Basin and Yorba fields, E. J. Carnahan, chairman; drilling, Los Angeles Basin fields, S. W. Hardison, chairman; central Midway fields, R. R. Shinn, chairman; Bakersfield district, Max S. App, chairman; Ventura district, N. M. Carrothers, chairman.

Pipeline department: Jack Gardiner,

Safety inspector; northern division, H. A. Denton, chairman; mountain division, W. A. Garvey, chairman; southern division, J. L. Martin, chairman.

Engineering department: L. F. Knox, Safety inspector; machine shop, George E. Fentress, chairman; boiler shop, R. E. Gracey, chairman; construction and miscellaneous departments, C. A. Best, chairman.



N. G. Guiberson and S. A. Guiberson, Jr.

Stores and transportation department: L. F. Knox, Safety inspector of stores; W. B. Pyles, Safety inspector of transportation; Frank N. Scott, chairman.

Sales and refinery department: Neunert Lang, Safety inspector of sales; W. A. Moyers, refinery Safety inspector; W. C. Beery, chairman.

Gas department: T. J. V. How, Safety inspector; R. C. Wheeler, chairman.

* * *

J. P. (Jimmy) Gahan is now in charge of the Fort Worth organization of the Tidal Oil Co. of Texas, succeeding J. H. Jenkins, transferred to San Francisco as general production manager of the Associated Oil Co. Mr. Gahan's new title is that of general manager. Mr. Jenkins was vice president of the Texas subsidiary of Tide Water Associated Oil Co., before his transfer. Messrs. Jenkins and Gahan had been together at Fort Worth for a number of years since leaving the Tampico district, where they represented the old Tide-Mex Oil Co.

* * *

Charles F. McCauley, general manager of the Mexican Atlas Oil Co., operating in the Tampico district, doesn't hesitate to use an airplane when he wants to get around quickly in the Aztec republic. He makes frequent trips to Mexico City for which he uses air transportation.

* * *

John Gibsone, general manager of the Territorial Oil Co., Tampico, has been spending an April vacation in New Orleans. In his absence, Guillermo Gottschalk was in charge of the Tampico offices.

* * *

John R. Suman, general chairman of the American Petroleum Institute Division of Development and Production Engineering, has appointed new national chairmen of the drilling practice committee and the prime movers committee. Announcement to this effect has been sent out by C. A. Young, executive secretary at Dallas, saying:

"R. E. Collom of the Marland Oil Co. of California, Los Angeles, has been appointed national chairman of the drilling practice committee, succeeding H. H. Anderson, who has resigned due to a change in his company duties.

"F. E. Richardson of the Marland Oil Co., Ponca City, Okla., has been appointed national chairman of the committee on prime movers, succeeding E. O. Bennett."

* * *

O. C. Zoller of the Pure Oil Co. is now assistant production superintendent in the El Dorado, Arkansas district. He formerly was located at Corsicana, in the Mexia-Powell fault zone area of east Texas. Zoller's activities are mainly in the Champagnolle (Rainbow City) territory. Ben Todd looks after the Norphlet and Smackover areas of the El Dorado district.

* * *

An accompanying snapshot shows A. S. Palmer, home office manager at San Francisco of the California Co., at the right, and Fred Winger, Yates field, Texas, assistant superintendent of production. The California Co. is the Rocky Mountain and Texas subsidiary of the Standard Oil Co. of California. The picture was taken on a recent southwestern trip. Both Messrs. Palmer and Winger are widely known in the petroleum industry.

* * *

Hallam H. Anderson, chief engineer of the Shell Oil Co. (California), now lives in Berkeley, making headquarters at San Francisco. He formerly lived at Los Angeles. Among his other activities Mr. Anderson includes supervision of the construction of the new Shell Oil Co. building in San Francisco.

G. M. Denman, the new chief engineer of the Pacific Western Oil Co., Los Angeles, was formerly field engineer of the Shell Oil Co. (California), at Long Beach.

* * *

W. C. Pettingell, vice president and western manager of the Tide Water Sales Corp., has recently assumed jurisdiction over the Hawaiian Islands as part of his territory. He returned to San Francisco headquarters in April after a month's trip to Honolulu.

* * *

H. A. Melat, production manager of the Gulf Production Co., Fort Worth, arrived in Los Angeles the middle of April for a two or three weeks' stay. While there he visited Walter B. Pyron, vice president of Western Gulf Oil Co., and formerly third vice president of the Gulf Production Co., at Fort Worth and Houston. Mr. Melat has been stopping at the Ambassador.

* * *

N. W. Pannell, long a drilling contractor in Texas and other southwestern territory, now makes his home in Los Angeles. He is in charge of contract drilling in California for the Sun Oil Co. of Philadelphia, which operates on the Pacific coast as the Twin State Oil Co. Harry Maxwell, western manager of the Twin State, has been entertaining Robert W. Pack, Gulf Coastal manager of the Sun at Beaumont, who spent some time in California in April.

Fred Winger and A. S. Palmer

California Production Boosted Just Before Proration

LOS ANGELES, April 19

KETTLEMAN HILLS held the attention of California executives today as a meeting was held to decide on a feasible plan for prorating this very important field.

Umpire F. C. van Deinse issued General Order No. 1 on April 17 to be effective April 22. This order gives the potential production, allotted production, and current allowable production for each field. It is too early now to tell how this order will be received, but the majority of the operators are expected to fall in line at once.

Santa Fe Springs, with 10 completions and recompletions, showed a flush production of 20,320 barrels of new oil, greatly overshadowing the decline of 8560 barrels sustained by the 120 wells that were producing last week. The upper zone wells have shown an increase in production of about 2000 barrels daily since the first of April.

In anticipation of the enforced curtailment to be effective April 22, many of the wells that were idle have been placed on production. Most of these wells previously produced from the Meyer zone but were shut down during the deep drilling campaign.

Without the use of icewater or reagents in the cement, Ed McAdams obtained the first successful water shut off below 7000 feet in the Rhode No. 2. This well of the Rhode Oil Syndicate came in for an estimated initial production of 3500 barrels from a depth of 7407 feet. Through the successful completion of this well the deep zone area is extended to the east as far as Sunshine Acres, a small subdivision on the southeast edge of the field.

Associated Oil Co.'s Clarke No. 2 has been bridged back from 7831 feet since its recent test proved that the recement job was not successful. The shoe will be tested and if found wet an attempt will be made to reset the casing.

Associated's Dallugge No. 7 is preparing to set casing over the lower Clarke at 7787 feet, with the bottom of the hole at 7850 feet.

California Eastern, or what is now known as Sunset Pacific's S. F. No. 2 found that a cement job at 7025 feet was a failure. Nova, a German cement, was used but tested soft, although treated with the Osborne reagent.

Long Beach, with an estimated total daily average production of 319,900 barrels for the 902 producing wells, proved a menace to control plans. Probably here, as at Santa Fe Springs, the increase comes as an effort to gain a few days of open production before curtailment is enforced.

Seal Beach came long with several nice wells during the past week. Marland Oil Co. completed its McGrath-Selover No. 6 for 1700 barrels and expects to bring in a substantial producer in the Bixby No. 7 within a day or so. Standard Oil Company completed its San Gabriel No. 6 at 5120 feet for 1300 barrels and Associated Oil Co. brought in Bryant No. 12 for 1600 barrels from 5650 feet. These wells are all from the Wassem zone, which overlies the still deeper McGrath zone.

Lawndale activities have caused the hopes of many small operators to fluctuate very rapidly during the past few days. Pacific Western's Howland No. 2 was recompleted for 600 barrels but at latest reports was flowing by heads.

Several wells in various parts of the field have reported streaked sands, but apparently not one has had showings that were worthy of note.

From a survey of the field it was found that of the 61 wells in various stages of drilling, 23 were idle. Ten of these were below 5500 feet and nine were below 6000 feet. A fair estimate would place the cost of operations in this field at over ten million dollars. All of this activity started from the completion of a 600 barrel well near a townlot area.

Ventura Avenue threatens to be a big factor in future control programs, as the major operators continue to make new locations. Total production of the field was up to 58,000 barrels of oil and 235,998,000 cubic feet of gas per day. Much of the gas is being used for repressuring with very satisfactory results. Associated Oil Co. made a new location for wells Nos. 11 and 12, and the Shell Oil Company located No. 34 on the Gosnell properties and Nos. 43, 44 and 45 on the Taylor leases.

Kettleman Hills has had a spurt of drilling as fear of a heavy curtailment program is felt. Standard Oil Company graded for four new locations and tentative plans have been announced by several other operators for future drilling. General Petroleum Co.'s Ochsner No. 2 was killed and is now cleaning out at 6760 feet, with bottom at 6850 feet. Six wells are now drilling below 5000 feet and 16 others are pushing the drill as much as possible.

Barnsdall Rio Grande's joint test Elwood Community No. 1 tested wet. According to company officials the well will be deepened in search of a new sand and a smaller string of pipe will be run. Luton-Bell No. 4, the most westerly producer on the lease, came in for 5000 barrels of clean oil and 2,000,000 cubic feet of gas from a depth of 3439 feet. The field has an estimated daily average production of 29,450 barrels for the week.

* * *

Big O'Connell Zone Producer In

(By Telegraph)

LOS ANGELES, April 23.—Wilshire Annex Oil Co. completed its Koontz No. 3 at Santa Fe Springs for 9400 barrels of 34 gravity oil from a depth of 6800 feet. This well is the biggest producer from the O'Connell zone. It is conclusive proof of the importance of this zone and is a great encouragement to those operators who doubted whether these sands would be highly productive.

Under present plans the well will run wide open for the ten days allowed under general order No. 1 issued by the Umpire effective April 22 after which a special interim order will be issued to fix the allowable production until general order No. 2 is effective.

A. P. I. Production Group To Hold 3 Meets

TULSA, April 20.—Three principal meetings of the Petroleum Division, American Institute of Mining & Metallurgical Engineers, will be held during the administration of the officers elected in February. Dr. J. B. Umpleby, chairman of the division, says that a meeting will be held in Los Angeles early in October, a second just prior to or following the International Petroleum Exposition, in Tulsa and the third will be the usual February meeting in New York.

It is announced that subjects of live interest to the oil industry will be handled through these meetings, particularly subjects not featured by other associations. The California meeting will have to do largely with technical discussions on over-production and proration. In the Tulsa meeting, much consideration will be paid to unit development, well spacing and other methods of production control.

Texas-Empire to Lay Line to Indian

TULSA, April 20.—Information given by the Empire Companies, Bartlesville, on the new Texas-Empire Pipe Line Co.'s 12-inch oil line from Oklahoma to the Chicago district, reveals that a branch line, eight inch size, will be laid from the main line where it passes Heyworth, Ill., to Lawrenceville, Ill., to serve the Indian Refining Co. Heyworth is a short distance south of Bloomington. This branch line will be 130 miles long.

Construction work on the system has been delayed somewhat by the wet weather which prevails throughout the territory. The system will be 624 miles of main line and 200 miles of branch. A statement made by the Empire company says:

"Approximately 500 men are engaged in the construction work. All of the main line construction is of electrically welded A. O. Smith bell and spigot 12-inch pipe from Cushing, Okla., to Wilmington, Ill., excepting the river crossings which are of bell and spigot seamless type. From Wilmington to East Chicago, Ind., where the Empire Refining Co. is building its new refinery, the line will be of 10-inch diameter and from Wilmington to Lockport, Ill., where the Texas refinery is located, the line will be of eight-inch diameter."

The third branch line will be that to Lawrenceville, Ill. The system will have nine pump stations, eight of the oil engine type and one electrically driven unit of 40,000 barrels daily capacity.

There are 12 main line gangs and two river-crossing gangs at work now. Charles F. Rayle, of Wichita, has the contract for the Oklahoma section from Cushing to Chetopa, Kans.; Kelley-Dempsey, of Tulsa, the Kansas-Western Missouri section from Chetopa to El Dorado Springs, Mo.; Williams Brothers, Tulsa, the section from El Dorado Springs to Wilmington, Ill. The branch line, Heyworth to Lawrenceville, will be built by Henry L. Lemons, of Pampa, Tex. Contracts for the other branch lines have not been let.

Four major river crossings feature this line. One is the Arkansas, near Tulsa. The Missouri will be crossed between Sedalia and Jefferson City, Mo., the Mississippi near Hannibal, Mo. The crossing on the Illinois River, near Cooperstown has been completed.

It is estimated that the line will be completed and tested by July 15.

Oil wells in Ecuador range in depth from 200 to 3600 feet.

St. Clair Re-elected President By Independent Agency

Staff Special

LOS ANGELES, April 18

L. P. ST. CLAIR, vice president of the Union Oil Co. of California, has been again elected president of the Independent Oil Producers Agency, which was formed years ago for the purpose of cooperatively marketing production of its San Joaquin Valley members under contract. Stanley W. Morshead is vice president and W. B. Robb, secretary-treasurer.

Agency members voted unanimously to renew present contract arrangements, which would have expired next December. Production covered by agency participation and resale to the Union Oil Co. of California comes from hundreds of small wells in the Bakersfield and Coalinga territories.

Secretary Robb's annual report for 1928 revealed that the agency returned to its members $4,242,000 last year, a net average return slightly in excess of 75 cents a barrel; the cost of the agency's operation was four mills per barrel.

Members of the executive committee were elected by the agency as follows:

H. H. Welsh, D. S. Ewing, H. D. Colson, S. W. Morshead, W. W. Colm, W. L. Stewart, C. E. Olmsted, E. E. Bailey, George R. Harrison, K. C. Wallace, H. L. Westbrook, John L. McGinn, L. P. St. Clair, and W. B. Robb.

The following are directors:

E. E. Bailey, Revue Oil Co.; C. J. Berry, Berry Holding Co.; W. H. Boyd, Big Ten Oil Co.; W. H. Bradley, Amazon Oil Co.; W. W. Colm, Virginia Oil Co.; H. D. Colson, Victor Oil Co.; Martin Coyne, Paraffine Oil Co.; A. J. Crites, Anchor Oil Co.; Henry Erickson, Carneros Oil Co.; Hugh B. Evans, Hugh B. Evans, Inc.

Fred D. Turner, Jade Oil Co.; D. S. Ewing, Ethel D. Oil Co.; R. R. Fishell, H. H. & F. Oil Co.; Earl Fleisher, Rambler Oil Co.; James H. Goodwin, B. H. C. Oil Co.; C. R. Hannaman, Hannaman-Lawton Oil Co.; George R. Harrison, East Puente Oil Co.; John H. Harding, Hopper, Harding & Fishell; Leonard Hopper, Pan Pacific Oil Co.; H. T. Johnson, Margeret M. Clampitt Co.

W. T. Knowles, Seneca Oil Co.; C. A. Landgren, Traders Oil Co.; Herman Layer, Pierce Petroleum Co.; John L. McGinn, Manley & McGinn; Alex Miller, Del Rey Oil Co.; S. W. Morshead, Pleasant Valley Farming Co.; C. E. Olmsted, The Texas Co.; H. F. Owen, B. B. & O. Oil Co.; M. C. Parker, M. C. Parker Co.; Walter F. Perris, W. F. Perris Co.

George R. Peckham, W. T. & M. Co.; C. E. Price, Pricewell Oil Co.; R. E. Richard, Acorn Petroleum Co.; W. B. Robb, Nevada County Oil Co.; E. S. St. Clair, Calex Oil Co.; L. P. St. Clair, S. W. & B. Oil Co.; W. L. Stewart, Union Oil Co. of California; W. R. Wardner, Boston Petroleum Co.; K. C. Wallace, Kendon Petroleum Co.; Chester H. Warlow, Ward Oil Co.; A. Wells, Jewett Oil Co.; J. B. Wells, Kern Sunset Oil Co.; H. H. Welsh, Berry & Ewing; H. L. Westbrook, Midway Peerless Oil Co.; Donald W. Whittier, Hondo Oil Co.; Leland K. Whittier, M. H. Whittier Co.; T. M. Young, Carbo Petroleum Co.; and William T. Zimmer, Pilot Oil Co.

Seminole Field, Men Organize

TULSA, April 20.—Pursuant to the plan adopted by the Mid-Continent section of the American Petroleum Institute division of development and production engineering, the second field chapter was organized in Seminole the night of April 17. About 35 field superintendents, foremen and engineers were present. J. R. McWilliams, of the Skelly Oil Co., chairman of the Mid-Continent section, attended.

Officers for this chapter will be chosen at the next meeting, which will be held the evening of May 7 in Seminole. It was decided to devote the evening to a discussion of drilling practice with particular reference to methods of drilling straight holes.

Lloyd Summers, Barnsdall Oil Co. engineer, was made chairman of a committee to plan the program. C. V. Sidwell, of the Amerada was appointed to this committee and the two were to choose a third member.

Mr. McWilliams said that the dates May 28 and 29 have been tentatively fixed for the general meeting of the Mid-Continent section in Tulsa. It is planned to devote the meeting to two topics, gas lift and crooked holes.

Considerable information will have been contributed by that time by the field chapters—two having been formed and four more shortly to be organized. Under the plan of organization of the Mid-Continent section, Vice-Chairman C. P. Dimit, of the Gypsy Oil Co., collects the discussion held in the field chapters on production practices and Mr. Jacobson, the other vice-chairman, on drilling practices.

Completions in Oklahoma and Kansas, Week Ended April 20, 1929

OKLAHOMA

Carter County

Company	Well No.	Location	Depth	Init. Prod.
Schermerhorn et al.	2	NWc NE NE NW 24-5-1 E	T.D. 4536	Dry

Cotton County

Cullum-Jenkins	4	SEc SW SE 34-1-10 W	T.D. 2204	Dry

Creek County

Winemiller et al	1	SWc SE 9-19-7 E	T.D. 2861	Dry
Smith et al	1	NWc NE SE 8-19-7 E	T.D. 3503	Dry
Schermerhorn	1	SEc NW NW 14-18-10 E	T.D. 3175	Dry
Red Bank	1	SWc SE NE 34-16-10 E	T.D. 3135	Dry
Lixie	6	SEc 7-19-9 E	2145-2163	2.5M
Devonian	2	CEL W½ SE NW 4-18-12 E	2173-2185	10

Garvin County

Magnolia	1	NE SW NW 14-1-3 W	1415-1600	10

Hughes County

Furhman-Newman	2	C SW SW 21-9-10 E	2655-2662	8¼M
Westheimer-Daube	2	NWc 29-5-8 E	2558-2578	135
Sunray	1	SW NW NE 19-5-8 E	2555-2622	490

Jefferson County

Humble	2	NEc NW NW NE 3-7-5 W	1215-1223	35

Lincoln County

Mid-Continent	1	SEc NE NW 13-15-5 E	T.D. 4468	Dry

Muskogee County

Rout	1	SW SE SE 11-14-19 E	T.D. 1050	Dry
Evans	1	NWc SW 11-14-19 E	T.D. 492	Dry
Evans	1	SW NW SW 2-14-19 E	T.D. 1003 OWD	Dry
Colton-Lester	1	SWc NW SW 25-12-19 E	T.D. 1170	Dry
Bryan	1	SWc NW SW SW 3-15-15 E	1572-1579	25

Okfuskee County

Atlantic	2	SWc 12-10-11 E	2072-2084	5
B. & B. Drlg	1	NWc SE 4-11-11 E	T.D. 3825	Dry

Okmulgee County

Moffitt et al	1	NEc NW NW 10-11-12 E	2764-2767	3.5M

Osage County

Stoner Bros	3	CSL N½ NW 31-24-9 E	2122-2143	5
McCune et al	12	SEc NW 15-24-8 E	464-495	10
Mundy et al	1	NEc SE 10-21-8 E	1720-1760	6
I. T. I. O.	1	NEc SE 26-26-8 E	T.D. 1704	Dry
Okla. Natural	1674	SWc NW 13-21-11 E	T.D. 2224	Dry
Mundy et al	1	NWc SW SW NE 4-20-9 E	T.D. 527	Dry

Pawnee County

Washoma	1	SEc NW 33-22-5 E	3134-3146	10

Pottawatomie County

Texas	7	SW SE SE 7-8-5 E	4203-4219	265
Pure	1	NW SW NE 19-8-5 E	4339-4355	75
Phillips	5	NE NW NW 19-8-5 E	4188-4223	225
Skelly-Margay	4	SE NW NE 18-8-5 E	4128-4129	200
Pine	1	SWc NE 18-8-5 E	4112-4140	230
Magnolia	4	NW SE SW 8-8-5 E	4440-4503	45
Texas	2	NWc SE 7-8-5 E	4268-4311	600
Sinclair	6	NEc NW 18-7-5 E	4106-4122	440
Magnolia	2	NE NW NW 18-7-5 E	4156-4158	600
Sinclair	2	SEc SW 7-7-5 E	3960-4112	515
Sinclair	1	NWc SW 24-7-4 E	4133-4162 OWD	30
Mid-Continent	2	NW NE NE 18-8-5 E	T.D. 4507	Dry
Amerada	3	NWc NE 7-8-5 E	T.D. 4155	Dry
Gypsy	1	NE NW NE 12-8-4 E	T.D. 4635	Dry
Continental	1	SEc NW 19-7-4 E	T.D. 4532 OWD	Dry

Seminole County

Burke-Greis	1	SE NE NW 13-9-7 E	T.D. 4263	Dry
Marland	1	SE NE SW 32-8-7 E	T.D. 4590	Dry
Carter	1	SEc NW 26-7-6 E	T.D. 4206	Dry
Carter	1	SEc SW 2-8-5 E	4293-4297	3735
Marland	3	SEc SW 7-8-6 E	4406-4429	60
Gypsy	3	SW NE NE 7-8-6 E	4246-4251	295
Magnolia	1	SW NE NE 26-7-6 E	3123-3136	25M

Stephens County

Harris et al	1	NW SW NE 24-1-4 W	2772-3058	25
American PL	4	SWc SE NW 34-1-8 W	1856-1861	100
Magnolia	3	NEc SW NE 13-2-8 W	1458-1468	40
Stahl-Burris	1	SE NE NW 2-1-7 W	T.D. 3012	Dry
Magnolia	10	NWc NE NW 33-1-8 W	T.D. 2720	Dry
Davidson et al	1	SE NW NE 5-2-4 W	T.D. 1375	Dry
Pace et al	1	CWL SW NE 16-2-4 W	T.D. 1931	Dry

Wagoner County

Okla. Natural	4	NWc NE NW SW 22-18-17 E	T.D. 830	Dry

KANSAS

Barber County

Barber	1	C NE NW 20-34-13 W	T.D. 5395	Dry

Barton County

Mid-West	34	SW SE SW 11-16-15 W	T.D. 3730	Dry

Butler County

Martle	1	SEc SW 12-27-5 E	T.D. 3156	Dry
Patten et al	1	NW SE SW 11-27-5 E	2690-2720	50
Empire	7	SE NE SW 27-27-5 E	2712-2752	200

Coffey County

Spencer-Derby	1	NWc SW 14-23-15 E	T.D. 1555	Dry

Cowley County

Broadwater Drlg.	1	SE NE SE 17-30-3 E	T.D. 3490	Dry
White Eagle et al	1	NWc SE 25-31-4 E	T.D. 3428	Dry
Dewey-Barnsdall	1	SE SW NE 36-31-4 E	T.D. 3458	Dry
Lewis Prod	1	NE SE NW 30-31-6 E	T.D. 3040	Dry
Trees	1	SW NW NE 12-32-6 E	2428-2451	1⅛M

Greenwood County

Empire	12	SEc NW 21-23-11 E	1865-1974	375

Harvey County

Garland et al	1	NEc 27-24-1 W	T.D. 3517	Dry

Marion County

Davis	1	SWc NW 7-19-3 E	2807-2815	275
Beck	1	NWc NE NE NE 22-17-4 E	2390-2447	30

Russell County

Midwest Explor	22	NW SE SE 5-14-15 W	3046-3096	30
Midwest Explor	22	NW SE SW 32-13-15 W	3039-3074	75
Empire	1	NE NW SE 31-13-15 W	3333-3335	100
Midwest Explor	31	SWc 30-12-15 W	3055-3089	150

Sedgwick County

Davis-Skelly et al.	5	NE SE NE 1-26-1 W	3388-3393	1120
Bu Vi Bar et al	1	NEc NW 7-26-1 E	3358-3365	1800
White Eagle	1	SW NW NW 6-26-1 E	3391-3393	350
Vickers	2	SW NE SW 6-26-1 E	3381-3384	750
Vickers	1	SW NE SW 6-26-1 E	3379-3382	740
Tidal	1	SE SW NW 6-26-1 E	3372-3378	275
Pyle-Sutter	2	NEc NW SE SW 6-26-1 E	3376-3378	1045
Pyle-Sutter	1	NW SE SW 6-26-1 E	3381-3384	1000
Montour	1	CWL E½ SE SW 6-26-1 E	3384-3391	1200
Derby	1	CWL E½ NW SW 6-26-1 E	3364-3374	950
Bu Vi Bar	2	SE NE SW 6-26-1 E	3372-3367	270
Bu Vi Bar et al	2	SEc SW SE SW 6-26-1 E	3373-3378	1125
Allison et al	1	SW NW NW 6-26-1 E	3375-3385	145
Stearns-Streeter	1	SW NW NE 7-26-1 E	3377-3383	1400
Bu Vi Bar et al	2	SE NE NW 7-26-1 E	3368-3376	1290
Bu Vi Bar et al	1	NW SW NE 7-26-1 E	3368-3375	340
Phillips-Prairie	1	SWc NE 6-26-1 E	3386-3390	200
Mary Jane	2	NE SE SW 6-26-1 E	3367-3392	1225
Bu Vi Bar	1	NWc 6-26-1 E	3375-3385	100
Alladin-Prairie	2	SE SW SE 36-25-1 W	3391-3400	100
Shawver et al	1	SE SW SE 19-28-1 E	T.D. 3633	Dry
Barnsdall	1	SWc NW 6-27-1 W	T.D. 3950	Dry
Jones et al	1	NWc 6-26-1 E	T.D. 3630	Dry
Patton et al	1	NEc 22-25-1 E	T.D. 3580	Dry
Shawver-Dickey	1	SW NW SW 31-25-1 E	T.D. 2710	Dry
Miller et al	1	NWc SW 31-25-1 E	T.D. 3467	Dry
Derby	1	SW NW SW 31-25-1 E	T.D. 3425	Dry
Brandsbury-Hinkle	1	NWc 31-25-1 E	T.D. 2650	Dry

Stevens County

McKenna et al	1	SEc NE 10-33-38 W	2592-2636	8M

Sumner County

Carey et al	1	SW SE SW 16-35-2 E	3330-3372	5M

Completions in California, Week Ended April 13, 1929

Long Beach

Company	Well No.	Location	Depth	Init. Prod.
Dabney-Johnson	No. 25	....	6610	2000
Doheny, E. L.	Nelson 2	....	7118	1660
Jergins A. T. Synd	No. 25	....	7810	434
MacMillan Pet. Corp.	Ifland 2	....	5878	600
Richfield Oil Co	Meador 2	....	7025	2258
Shell Oil Co.	Pickler 11	....	6452	623

Santa Fe Springs

General Pet. Corp.	S. F. 137 B	....	5130	1250
General Pet. Corp.	S. F. 137 C	....	5910	3200
The Texas Co.	Standlee 5	....	5886	2515

Seal Beach

Associated Oil Co.	Bryant 12	....	5650	1585
Marland Oil Co.	Bixby 17	....	5710	1450
Standard Oil Co.	San Gabrial 5	....	4955	1635

Athens Rosecrans

Banrsdall Oil Co.	Rosecrans 5A	....	5275	100

Ventura Avenue

Pacific Western Oil	Orton 9	....	7021	1770

Rincon

Chanslor-Canfield-Midway Oil Co.	Hobson B4	....	3215	200

Elwood

Barnsdall Rio Grande	Bell 4	....	3440	3500

Mt. Poso Creek

Ohio Oil Co.	Midway Premier 1	32-27-27	2805	160

New Field Operations in Oklahoma, Kansas, North, North Central, East Central, Panhandle and West Texas, Week Ended April 20, 1929

OKLAHOMA

Cherokee County

Company	Well No. & Farm	Location
Shell	1-Willey	NWc NE 25-16-19 E

Creek County

Abbott et al	1-Petraseck	NEc SW 12-19-9 E
Silurian-Houston	2-Anthis	SEc SW SE 6-19-7 E
Sherry et al	1-Barnett	NEc SW 20-18-10 E
Tibbens	40-Connesenny	CSL SE NW 30-15-9 E

Hughes County

Texas	1-Bryant	SE NE SW 9-6-8 E

Jefferson County

Company	Well No. & Farm	Location
Beck	2-Seay	SEc SW SW SE 34-6-5 W

Kay County

Harris-Haun	1-Brown	SWc 9-27-1 W OWD

Lincoln County

Magnolia	1-Mitchell	NEc 33-14-6 E

Muskogee County

Cushing	1-Myers	SEc SW SW 22-15-17 E OWD
Williams	1-Monday	CNL SE NE 17-15-17 E

(*Continued on Page 55*)

New Field Operations in Oklahoma, Kansas, North, North Central, East Central, Panhandle and West Texas, Week Ended April 20, 1929

(Continued from Page 54)

Company	Well No. & Farm	Location	
Robinson Bros....	1-Brown	SEc 18-13-16 E	
Robinson Bros. Drlg.	2-Lewis	SWc NW NE 8-13-16 E	
Oklahoma County			
Shell.....	2-Petty	SWc NE 30-11-2 W	
Osage County			
Wrightsman.....	1.....	NWc NE NW NW 20-26-9 E	
Peters.....	2.....	NW NE SE 18-24-8 E	
Marland-Gypsy...	1.....	SEc NE 21-24-7 E	
Stanley et al.....	2.....	NWc NE SE SE 14-21-8 E	
Mid-Continent....	1.....	NWc SE 34-20-10 E	
Pawnee County			
Sears.....	3-Wiggs	SW NE NW 35-20-9 E	
McMann et al....	1-Johnson	CWL SE SE 27-20-9 E	
Payne County			
Home.....	1-Grass	NWc SE 13-18-5 E	
Pottawatomie County			
Gypsy.....	4-Rosemand	NWc NE 26-7-4 E	
Phillips.....	1-Lydick	SEc NE 24-7-4 E OWD	
Gypsy.....	2-LeClaire	NE SW SE 23-7-4 E OWD	
Gypsy.....	1-LeClaire	NW SW SE 23-7-4 E OWD	
Continental.....	1-Light	NE SE SE 18-7-4 E	
Seminole County			
Carter.....	1-Davis	NE SE SW 7-6-8 E	
Empire-Marland..	3-Anderson	NW SE SW 13-9-5 E	
Cosden.....	3-Anderson	SE NW SW 13-9-5 E	
Gypsy.....	1-Payne	NW NE SE 18-9-6 E	
Magnolia.....	2-Anderson	SE SW NE 18-9-6 E	
Magnolia.....	1-Anderson	SW SE NE 18-9-6 E	
Carter.....	1-Sanford	NWc SE 16-9-6 E	
Magnolia.....	1-Sarkeys	SW NE NW 8-9-6 E	
McCulloch.....	1-Coody	SE SW SE 18-9-7 E OWD	
Blackwell-Fisher..	1-Jonah	SWc NE 15-9-7 E	
Magnolia.....	3-Fee	SE NW NE 11-8-5 E	
Magnolia.....	1-Reed	NEc SW 4-8-7 E	
Magnolia.....	1-Wood	SEc 28-7-6 E	
Signal.....	1-Bond	SWc NE 13-6-7 E	
I. T. I. O.....	1-Porter	NEc 24-6-7 E	
Stephens County			
Shell.....	4-Cook	NWc NE SW 30-1-8 W OWD	
Magnolia.....	9-Green	SWc NW 13-1-4 W	
Clark-Cowden....	4-Davidson	NWc SW 13-1-4 W	
Magnolia.....	23-Kagay	NEc NW NE SW 34-1-8 W	
Magnolia.....	22-Kagay	NEc SW 34-1-8 W	
Ven-Mex and Mid-Continent	3-Gilworth	NEc SE NW 2-2-6 W	
Pace et al.....	2-Donham	SWc SE NE 11-3-8 W	
Pace et al.....	2-Bristowe	SWc NW 18-2-7 W	

KANSAS

Butler County			
Alladin.....	1-McLean	SW SE NW 8-27-6 E	
Empire.....	7-Cranston	SW SW SE 22-27-5 E	
Empire.....	6-Brandenburg	NW NE NE 22-27-5 E	
Lario.....	1-Glancy	SWc 10-26-3 E	
Greenwood County			
Sheedy et al.....	3-Green	SE NW NW 12-23-9 E	
Harvey County			
McPherson.....	1-Ruth	SW NE NW 14-23-2 W	
Marion County			
Prairie-Connell...	1-Girak	SEc SW 3-16-3 E	
Rush County			
Sinclair.....	1-Seuser	SE NW NW 8-18-17 E	
Saline County			
Dixie.....	1-Muir	SW SE SW 6-15-2 W	
Kenny Coastal...	1-Hughes	NEc 20-13-4 W	
Sedgewick County			
Bu Vi Bar et al...	3-Shawver	NE SE NW 7-26-1 E	
Burnett.....	1-Davidson	NWc SW 27-26-1 E	
Bu Vi Bar et al...	1-Vallbrecht	NW SW NE 72-6-1 E	
Bu Vi Bar.....	6-Goodrich	NWc SE 6-26-1 E	
Bu Vi Bar et al...	6-Bright	SEc NW 6-26-1 E	
Sumner County			
Marland-Carter...	1-Kratz	SWc NW 26-24-2 E	

TEXAS

NORTH CENTRAL AND EAST CENTRAL

Company	Well No. & Farm	Location	Survey
Brown County			
Green.....	4-Hill	Sec-8	Walker
McClung et al....	2-Davis	Sec-43 Blk-276	Kerr Co. Sch. Ld.
McClung-Hickey..	2-Lowe	Blk-138	Winn
Christie.....	1-Wilkins	Sec-18 Blk-789	Delgado
Moore.....	1-Cross	Blk-623	Honeycutt
Bearman et al....	4-Spencer	.....	Swindle
Greene Prod.....	7-Moore	.....	De Bond
Humble.....	22-Hodnett	Blk-784	Harris
Humble.....	3-Terrwosen	Sec-11	HT&B
Coleman County			
Texas-Pacific.....	3-Gay	Blk-630	Fisk
Magnolia.....	23-Morris	Blk-80	Davidson
Callahan County			
Mortimer.....	2-Hickman	Sec-2	I&GN
Humphreys.....	3-Gary	Sec-40	D&DA
Sullivan et al.....	1-Walker	Sec-30	D&DA
Richards.....	1-Berry	Sec-3	C&M
Moutray.....	15-Hatchett	Sec-24	D&DA
Reiter-Foster.....	26-Hatchett	Sec-24	D&DA
Blackwell et al....	1-Eubanks	Sec-48	Comal Co. Sch. Ld.
Warren-Hays.....	3-Able	Sec-32	D&DA
Eastland County			
Jenkins et al.....	1-Madding	Abst-424	Robinson
Garner.....	1-Fields	Blk-4	Rubarth
Kirk et al.....	1-Oldham	Sec-48 Blk-2	H&TC
Kirk-Whitesides..	1-Turner	Sec-30 Blk-2	H&TC
Erath County			
Brown Drlg.....	1-Davis	.....	Holland
Shaw et al.....	1-Cox	Sec-15	Espinasa
Haskell County			
Kourn et al.....	1-Reynolds L. & C. Co.	Sec-103	IRR
Jack County			
Shaw.....	1-Box	.....	Hughson
Buttrum.....	1-Vanhooser	.....	SFIW
Jones County			
Phillips.....	3-Pomroy	Sec-16 Blk-19	T&P
McCulloch County			
White.....	1-White	Blk-65	H&TC
Shackelford County			
Ohio Texas.....	2-Mathews	Sec-29	ET
Roeser-Pendleton.	1A113-Cook	Sec-113	ET
Sommers et al....	1-Williams	Sec-565	TE&L
Tannehill et al....	2-Hill	Sec-2	LAL
Tannehill et al....	1-Whitney	Sec-802	TE&L
Stephens County			
Mook Texas.....	7-Head	Sec-31 Blk-6	T&P

NORTH TEXAS

Archer County			
Christy et al.....	1-Campbell	Abst-5	Armes
Panhandle et al...	1-Snider	Abst-340	Pearce
Beasley.....	3-Abercrombie	Blk-41	Harris
Moran Drlg. et al.	2-Scott	Abst-1205	James
Moran Drlg. et al.	1-Bloodworth	Abst-60	Cartwright
United Prod.....	1-Turbeville	.....	Frazier
Gulf Prod.....	3-Ward	Abst-452	Tomlinson
Lea-Daniels.....	7-Williams	.....	Hand
Cooke County			
Humble.....	2-Poteet	.....	Stephens
Texas.....	8-Dennis	Abst-484	Hutchinson
Wilbarger County			
Robertson et al...	1-Waggoner	Sec-49 Blk-4	H&TC
Consolidated.....	1-Waggoner	Sec-1 Blk-13	H&TC
Lawson.....	1-Waggoner	Sec-7 Blk-4	H&TC
Burton.....	1-Waggoner	Sec-11 Blk-4	H&TC
Staley-Wynne....	6-Waggoner	Sec-32 Blk-4	H&TC
Hammond et al...	1-Waggoner	Sec-15 Blk-4	H&TC
Lewis Prod.....	10-Waggoner	Sec-18 Blk-4	H&TC
Melot et al.....	5-Waggoner	Sec-10 Blk-4	H&TC
Wichita County			
Panhandle.....	2-Barnett	Abst-464	Meade
Hines.....	3-Barnett	Abst-464	Meade
Young County			
Pennell.....	5-Calvin	Abst-240	Rohus
Sun.....	1-Rogers	Sec-229	TE&L
Riggs et al.....	1-Langston	Sec-1490	TE&L
Maycamp Drlg...	1-Prideaux Bros.	Blk-15	YCSL
Lloyd.....	1-Gregg	Blk-1 Abst-1946	Addington
Bundy et al.....	1-Brown	Sec-1368	TE&L

PANHANDLE

Gray County			
Texas.....	7-Bowers	Sec-89 Blk-B-2	H&GN
Texas.....	6-Bowers	Sec-89 Blk-B-2	H&GN
Texas.....	1-Patton	Sec-61 Blk-B-2	H&GN
Texas.....	2-Faulkner	Sec-29 Blk-B-2	H&GN
Wilcox.....	6-Combs	Sec-60 Blk-3	I&GN
Magnolia.....	4-Bowers	Sec-63 Blk-B-2	H&GN
Operators.....	7-Jackson	Sec-88 Blk-B-2	H&GN
Danciger.....	1-Beck	Sec-28 Blk-B-2	H&GN
Delaney et al.....	8-Jackson	Sec-88 Blk-B-2	H&GN
Panhandle.....	2-Saunders	Sec-3 Blk-1	ACH&B
Gulf Prod.....	1-Jackson	Sec-62 Blk-B-2	H&GN
Gulf Prod.....	7-Bowers	Sec-89 Blk-B-2	H&GN
Phillips.....	5-Jackson	Sec-88 Blk-B-2	H&GN
Hutchinson County			
Marland.....	1-Sanford	Sec-79 Blk-46	H&TC
Gulf Prod.....	44-Dail	Sec-36 Blk-M-23	TC
Gulf Prod.....	45-Dial	Sec-25 Blk-47	H&TC
Wheeler County			
Holmes et al.....	1-Close	Sec-82 Blk-23	H&GN

WEST TEXAS

Coke County			
McCamey et al...	1-McCutcheon	.....	Hines
Crane County			
Gulf Prod.....	7-Waddell	Sec-10 Blk-B-23	PBSL
Howard County			
Ward.....	1-Roberts	Sec-137 Blk-29	W&NW
Marland.....	9-Clay	Sec-139 Blk-29	W&NW
Fuhrman.....	1-Read	Sec-41 Blk-32	T&P
Cosden.....	4-Roberts	Sec-128 Blk-29	W&NW
Mitchell County			
Simms.....	1-Elwood	Sec-33 Blk-18	SP
Ellis et al.....	1-Elwood	Sec-30 Blk-18	SP
Adams.....	2-Elwood	Sec-15 Blk-18	SP
Adams.....	1-Elwood	Sec-20 Blk-18	SP
Sterling County			
Wilson et al.....	1-Elwood	Sec-53 Blk-18	SP
Upton County			
Humble.....	11-Ricker	Sec-5	Denton
Sun.....	1-Long	Sec-3	RT
Winkler County			
Southern Crude...	T89J8-Hendricks	Sec-9 Blk-B-12	PSL
Southern Crude...	T88K7-Hendricks	Sec-41 Blk-26	PSL
Southern Crude...	T8804-Hendricks	Sec-28 Blk-26	PSL

Completions in Texas, Week Ended April 20, 1929

NORTH CENTRAL AND EAST CENTRAL

Brown County

Company	Well Farm	Survey	Sec. & Blk.	Deptn	Init. Prod.
DeMont	1-Newton	Jones	Blk-282	T.D. 1485	Dry
Greene Prod.	3-Davis	SA&MG	Blk-4	T.D. 1320	Dry
McClung et al.	1-Davis	Kerr Co. Sch. Ld.	Sec-43 Blk-276	T.D. 1825	Dry
Paramount	6-Mayes	Ross	Blk-609	T.D. 730	Dry
Humble	15-Armstrong	Delgado	Sec-1 Blk-789	1191-1219	75
Humble	2-Fenswon	HT&B	Sec-11	985-987	12
Syndicate	5-Curry	Betts		1119-1125	5
United Royalties.	2-Fitzgerald	Johnson	Blk-106	1134-1137	1¾M

Callahan County

Schaffner	3-Cowan	Comal Co. Sch. Ld.	Sec-74	362-372	2
Reiter-Foster	23-Hatchett	D&DA	Sec-24	343-372	7
Humphries	2-Gary	D&DA	Sec-40	414-431	2
Schaffner	2-Cowan	Comal Co. Sch. Ld	Sec-74	360-370	2
Warren-Hays	2-Able	D&DA	Sec-32	402-408	10
Moutray	2-Hatchett	D&DA	Sec-23	T.D. 382	Dry
Malone Bros.	1-Berry	BOAL	Sec-70	T.D. 632	Dry
Kleiner	1-Hughes	BBB&C	Sec-129	T.D. 773	Dry
Gibson-Johnson	4-Snyder	BBB&C	Sec-141	T.D. 1076	Dry
Richards	1-Gilliland	BBB&C	Sec-131	T.D. 807	Dry
Amerada	1-Golson	Harris	Blk-164	T.D. 492	Dry
Joines et al.	1-Pollard	Young Co. Sch. Ld.	Sec-5 Blk-494	T.D. 1405	Dry
Owens	1-Burns	Wickson	Blk-168	T.D. 1695	Dry
Simons-Jones et al.	1-Mills	Martin	Sec-24 Blk-752	T.D. 1303	Dry
Eastland	6-Morris	Webber	Sec-24 Blk-722	2015-2017	200
Jamison-Pollard-Foster-Dunnigan	1-Rice Est.	Bond et al.	Blk-91	1133-1147	1M
Samuels	1-Matlock et al.	Votan	Blk-224	1043-1061	10
Samules	2-Robertson	Votan	Blk-224	1075-1079	1M

Eastland County

Teatsorth	1-Harbin	H&TC	Sec-9 Blk-4	1548-1965	12
Kokomo	2-Collins	H&TC	Sec-11	2994-3008	10
Atwood	2-Simmons	McCleman Co. Sch. Ld.	Sec-27	1136-1142	28
Moorman et al.	1-Herrington	Schoonoker		T.D. 3430	Dry

Erath County

Snebold-White	2-Smith	Bishop		3290-3298	25M

Jack County

Texas et al.	2-Jones	Hughson		3147-3155	110
Texas et al.	1-Bryson	Hughson		2116-2118	160
Shappel	1-Younger	Wood Co. Sch. Ld.	Blk-19	T.D. 3708	Dry

Jones County

Mid Sun	1-Hoehn	Crain	Sec-214	T.D. 2986	Dry
Phillips	3-Windham	T&P	Sec-17 Blk-19	2512-2521	75

Shackelford County

Roeser-Pendleton	2A88-Cook	ET	Sec-88	1400-1413	275&12M
Diell-Earle	6-Mathews	ET	Sec-32	1151-1155	100
Combest	1-Mathews	ET	Sec-2	T.D. 1215	Dry
Jodie-Harris	1-Ezelle	LAL	Sec-3	T.D. 736	Dry
Loggie et al.	1-Mathews	ET	Sec-1	T.D. 1115	Dry
Treat	5-Mathews	ET	Sec-33	T.D. 1750	Dry

Stephens County

McDonald	1-Langford	T&P	Sec-54 Blk-6	T.D. 2153	Dry

Taylor County

Wentz	1-Armor	SP	Sec-16 Blk-6	T.D. 2305	Dry
Grisham-Hunter.	1-Campbell	T&P	Sec-65 Blk-19	T.D. 2780	Dry

NORTH TEXAS

Archer County

Continental	1-Richardson	McCoy		T.D. 1236	Dry
Bradstreet	1-Ownes	Saunders	Blk-26	T.D. 752	Dry
Texas	1-Knight	KWVFL	Blk-69	T.D. 1924	Dry
Gilliland et al.	1-Easterling	Meade	Blk-20	T.D. 1470	Dry
Lea-Daniles	6-Williams	Hand		558-570	35
Petroleum Prod. et al.	1-Kunkel	BBB&C		1170-1185	53
Moran Drlg. et al.	1-Bloodworth	Cartwright		1213-1216	51

Cooke County

Texas	7-Dennis	Hutchinson		1224-1239	687
Westheimer et al.	1-Cox	Hernandez		T.D. 1758	Dry

Montague County

Cone et al.	1-Black	Wells	Blk-23	T.D. 3305	Dry

Wichita County

Comac Drlg.	1-Morgan	Meadows		T.D. 1810	Dry
Tulsa	1-Ancell	H&TC	Sec-7 Blk-7	T.D. 600	Dry
Hines-Humble	1-Waggoner	Willis		1332-1339	35
Humble	17-Taylor	KWVFL	Blk-81	1466-1485	73
Hunter	1-Waggoner	George	Blk-1	1299-1309	18

Young County

Bradstreet	8-Snider	Wilson		550-569	25
Wise-Jackson	6-Calvin	Rohus		647-656	7
Bradstreet et al.	1-Mathews	Rohus		T.D. 745	Dry
Brashear-Peacock	1-Gregg	YCSL	Blk-17	T.D. 661	Dry
Casey	1-Bagley	Averett		T.D. 632	Dry
Casey	2-Bagley	Averett		T.D. 628	Dry
Williams	1-Stewart	Tynes		T.D. 548	Dry
Bratcher-Riggs	1-Edwards	Tynes		T.D. 515	Dry

PANHANDLE

Carson County

Champlin	2-McConnell	I&GN	Sec-67 Blk-4	3118-3123	580

Gray County

Republic Prod.	1-Saunders	ACH&B	Sec-4 Blk-1	2785-2833	37
Phillips	5-Johns	I&GN	Sec-87 Blk-3	3111-3123	180
Operators	3-Jackson	H&GN	Sec-88 Blk-B-2	2846-2865	7444
Gulf Prod.	4-Holmes	I&GN	Sec-87 Blk-3	T.D. 3430	Dry
Danciger et al.	1-Williams	ACH&B	Sec-6 Blk-1	T.D. 3205	Dry

Hutchinson County

Phillips	4-Garland	H&TC	Sec-77 Blk-46	2961-2963	115
Phillips	1-Sanford et al.	H&TC	Sec-80 Blk-46	2898-3030	8
Barnum	1-Garland et al.	H&TC	Sec-78 Blk-46	2975-3060	2

Moore County

Dixon Creek	1-Sneed	G&M	Sec-65 Blk-GM-3	3110-3331	9M

Wheeler County

Rook	1-Nelson	H&GN	Sec-5 Blk-24	2010-2157	3M
Lone Star	4-Jones	H&GN	Sec-1 Blk-24	1815-1930	55M

Glasscock County

Coyle-Concord	6-Roberts	W&NW	Sec-156 Blk-29	1886-1899	30

Pecos County

Phillips	1-Ramsey	TC	Sec-17 Blk-194	1602-1750	45 (1 Hr.)
Mid-Kans. & Transc.	8-Yates	TC	Sec-32 Blk-194	1395-1574	1642
Mid-Kans. & Transc.	5-Smith	TC	Sec-31 Blk-194	1245-1435	220 (24 Hrs.)

Winkler County

Republic Prod.	13-Hendricks	PSL	Sec-45 Blk-26	2775-2898	6696
Magnolia	1-Scarborough	PSL	Sec-1 Blk-C-22	3045-3095	200
Gulf Prod.	1-Scarborough	PSL	Sec-1 Blk-C-22	3017-3350	90
Southern Crude.	T89E1-Hendricks	PSL	Sec-40 Blk-B-5	3102-3125	50
Southern Crude.	T88T7-Hendricks	PSL	Sec-34 Blk-26	3105-3122	42
Southern Crude.	T88Q2-Hendricks	PSL	Sec-27 Blk-26	2675-2738	100 (1 Hr.)
Skelly	1-Daugherty	PSL	Sec-22 Blk-26	2728-2785	1752

Completions in North Louisiana and Arkansas, Week Ended April 19, 1929

LOUISIANA

Caddo Parish

Company	Well	Location	Depth	Yield
C. H. French	Muslow No. 5	31-21-15	1695	25 bbls.

DeSoto Parish

Frierson District

Benedum and Trees	Nicholson No. 1	2-15-14	2975	Dry and abd.

Sabine Parish

Spider District

L. M. Moffett Tr.	Boatwright No. 1	3-10-13	3059	2½M ft. gas

Morehouse Parish

Bastrop District

Industrial Gas Co.	Crowder-Moore No. 1	31-21-58	2260	3M ft. gas
Southern Carbon Co.	Miles No. 2	1-20-48	2202	1M gas

Richland Parish

Lucknow District

Mag. Pet. Co.	C. M. Noble No. 1	36-16-35	2400	29M gas

LaSalle Parish

Urania District

Company	Well	Location	Depth	Yield
Ark. Fuel Oil Co.	Uraniz B-11	17-10-2E	1549	Salt water, abd.

Webster Parish

J. W. Clark,	Mayfield No. 2	20-23-9	2771	40 bbls. oil
Harry Morris	Lewis No. 1	15-23-9	2822	Dry, abd.

ARKANSAS

Union—Galion District

Ark. Nat. Gas Corp.	Morris No. 1	7-17-13	3037	660 bbls.

TEXAS

Marion County

Trimount Pet. Co.	Movena-Stiles	A-1	2365	15 bbls.

Panola County

Nat. Gas Prod. Co	B. C. Jordan	HRS	989	4M gas
Nat. Gas Prod. Co	Floyd No. 2	B. C. Jordan HRS	934	5M gas

Seminole Production Summary

(By Telegraph)

	April 20 Wells	April 20 Barrels	April 13 Wells	April 13 Barrels
Little River	328	73,236	326	73,612
Bowlegs	307	36,175	307	33,966
Earlsboro	302	59,623	302	62,199
Seminole City	277	34,376	277	33,130
Searight	72	9,655	71	8,584
Carr City	32	14,303	30	9,565
Maud	106	15,014	99	14,547
Mission	81	29,775	79	23,831
St. Louis	342	106,204	336	100,436
Totals	1,847	378,361	1,827	359,860
Average per well 205 Barrels		Average per	well 197 Barrels	

Inert Gas Provides Security Against Fire in Concrete Oil Reservoirs

By Lester C. Uren
Professor of Petroleum Engineering, University of California

PROTECTION afforded stored oil against fire and explosion through maintenance of an atmosphere of inert gases within the vapor space of tanks and reservoirs, was demonstrated in recent tests conducted at the Martinez Refinery of the Shell Oil Company (California). This method has been proven to the satisfaction of Shell Co. officials, and is now in practical use on several large concrete storage reservoirs at the Company's two California refineries.

The tests described below, were in the nature of a demonstration, conducted primarily for the information of a group of representatives of fire insurance companies and underwriters, with the purpose of securing lower insurance rates on stored oil so protected.

The inert gas employed is boiler flue-gas, continuously supplied, containing high percentages of nitrogen and carbon dioxide. After scrubbing with water to remove smoke and sulphur, the residual gas is led through a system of pipes to each of the reservoirs and discharged into the vapor space between the roof and the surface of the stored oil. A pressure only slightly above atmospheric is maintained, surplus gas being permitted to escape into the atmosphere through stand-pipes communicating with the vapor space of each reservoir.

As the tanks "breathe" with changes of temperature and barometric pressure, or in adding to or subtracting from the quantity of stored oil, they may expel inert gas, but always draw in a fresh supply of inert gas rather than air. The protection afforded is entirely due to deficiency of oxygen within the tank atmosphere.

In the second column of the table herewith is a typical analysis of gas from the vapor space of an oil-storage reservoir in which California high-gravity crude is stored without inert gas protection. The third column of this table gives a typical analysis of the flue gas used

Gas	Constituents of gas normally present in vapor space of reservoir above stored oil per cent	Constituents of inert flue gas per cent
Carbon Dioxide	0.4	11.2
Oxygen	15.9	3.7
Carbon monoxide	0.0	0.2
Hydrocarbons	11.3	0.0
Remainder (chiefly nitrogen)	72.4	84.9

Normally, mixtures of hydrocarbon vapors and air are explosive with percentages of hydrocarbons ranging from 2 to 6 per cent, maximum explosibility being attained with about 3.5 per cent of hydrocarbon. Hydrocarbon-air mixtures containing percentages of hydrocarbon vapor in excess of 6 per cent may burn, but do not explode violently. In a storage tank or reservoir, inequalities in the concentration of hydrocarbon vapor due to convection currents, gravitational stratification of heavy vapors and other irregularities, may prevent uniformity in distribution of hydrocarbons throughout the space between the oil surface and the roof of the tank.

Under static conditions, where the gas is completely confined and pressure equilibrium is attained, it is probable that diffusion will accomplish a reasonably uniform distribution of the hydrocarbon vapors; but when gas is escaping from the tank, the atmosphere immediately above the oil surface is probably richer in

Apparatus used in explosion tests, Shell Oil Co. refinery, Martinez, Calif. "B" is the suction blower; "E" is the explosion chamber; "D" is the paper diaphragm; and "A" is the gas analysis apparatus

hydrocarbons than the upper stratum immediately under the roof. When the quantity of hydrocarbon ranges above 2 per cent in any part of the vapor space of the tank, in the presence of a sufficient supply of oxygen, it must be recognized that an explosion or fire hazard exists.

When inert gases are used to fill or partially fill the vapor space of a tank, a much lower explosion hazard exists. Experiments performed by Shell Co. engineers have shown that explosions are possible only when the tank atmosphere contains less than 10 per cent of flue gas of the composition indicated in the table. If less than 10 per cent of flue gas is present, an explosion may occur only in the event that the percentage of air lies between 65 and 81 per cent and that of normal "tank gas" between 19 and 35 per cent. By "tank gas" is here meant gas having the composition indicated in the second column of the table herewith. The possibility of the reservoir developing an atmosphere in which all three of the constituents lie between the limits indicated, is considerably more remote than of air and "tank gas" developing explosive concentrations.

The narrow range of explosibility is indicated by the triangular graph reproduced in Figure 1. The entire area represents all possible variations in concentration of the three primary constituents. The small hachured area near the lower right-hand corner of the graph represents the limits within which explosive mixtures are formed. The important point to note in connection with these tests, is that no explosion may occur as long as the tank atmosphere contains more than 10 per cent of flue gas and uniform distribution of this flue gas throughout the vapor space of the tank is secured.

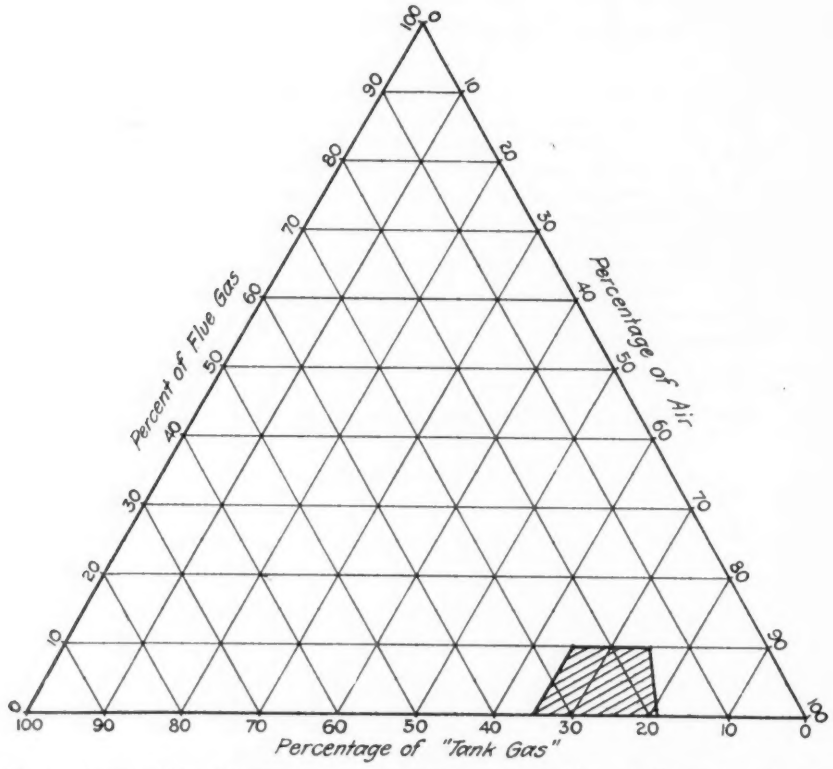


Fig. 1—Graph showing range in percentage composition of flue gas, air and "tank gas" in explosive mixtures. Only gases having a composition falling within hachured area, when plotted on this graph, are explosive

The tests conducted by the Shell Company engineers to demonstrate the protection afforded by inert gases, were performed with the equipment illustrated in Figure 2. A 1250-barrel tank, provided with a roof of construction similar to that used on the large storage reservoirs, contained a small amount of Los Angeles Basin (California) crude, artifically enriched to a gasoline content of about 40 per cent. The tank is equipped with a coil below the oil surface, for forcing air into the vapor space of the tank and to assist in rapidly vaporizing oil and securing rich gasoline-air mixtures. Inert gas is forced into the tank through a 4-inch pipe at the peak of the roof. A 4-inch stack on the inert gas supply line, permits of escape of excess gas not needed within the tank.

Four 2-inch pipes communicating with the vapor space of the tank at different elevations and different points about the circumference, permit of drawing samples from any part of the tank for test purposes. This is accomplished with the aid of a small electrically-driven suction blower. Tests are made in a cylindrical steel explosion chamber about 2 feet in diameter and 3 feet high, across the open top of which a gas tight paper diaphragm is attached. Two 2-inch pipe lines, one of which communicates through the suction blower, connect the explosion chamber with the tank sampling lines. By this means, the gas may be recirculated until a uniform mixture, free from contamination, is secured.

An air-line manifolded into the delivery line from the blower, permits of adding air to the incoming gas in any desired proportion, or of displacing gases from the explosion chamber. A water connection near the bottom of the explosion chamber, also permits of flooding the chamber to displace gas.

Provision is made for electrically firing the charge in the explosion chamber. A storage battery, control switch and condenser permit of sending intermittent charges of high-potential current across the terminals of a spark-plug extending through the walls and into the vapor space of the explosion chamber. A sampling connection is provided on the gas in that line for obtaining samples of gas from the explosion chamber.

The composition of each charge is checked immediately prior to test, with the aid of portable Orsat gas-analysis apparatus. All control valves on pipes leading to or from the test chamber are closed before a test sample is fired. The force of the explosion is relieved by rupture of the paper diaphram, which is of "detail" drawing paper. A 3-inch port in the side of the explosion chamber, normally closed by a threaded fitting, permits of inserting a long-handled torch into the test chamber in making inflammability tests of mixtures too rich in hydrocarbons to explode.

The results of the tests performed fully demonstrated the claims of the Shell Company officials relative to the protection afforded by inert gases in oil-storage containers.

At present the Shell Company is using inert gases only in protection of stored oil in large concrete reservoirs that present too large a surface for foam protection. Some of these reservoirs contain as much as a million barrels of oil under one roof. This type of storage reservoir is widely used in California, with small risk, in the storage of fuel oil or "topped" crude, but when used for storage of light crude, it presents a very definite fire and explosion hazard, as was proven in 1927 by the loss of upwards of eight million barrels of California crude through two diastrous reservoir fires started by lightning.

Though inert gases might also be

used to effectively reduce the fire and explosion hazard in steel tanks, it is thought that corrosion might be an important consideration where steel is the material used in construction of the storage container. The Shell Company is not at present using inert gas protection on its steel tankage.

The tests above described were conducted under the immediate supervision of Mr. C. O. F. Jenken, Superintendent, and Mr. A. G. Marshall, Test Engineer of the Martinez Refinery, Mr. T. D. Peace, Superintendent of the Shell Company's Insurance Department, and Mr. G. P. Cronk, Manager of the Engineering Department of Cosgrove & Co., insurance brokers. Among the forty or more who witnessed the tests in an official capacity, were Mr. Frank Gunnison, Chief of the Rating Bureau, Board of Fire Underwriters, S. E. Sweeman, Pacific Coast Manager of the Oil Insurance Association, and the fire chiefs of the cities of Oakland and San Francisco.

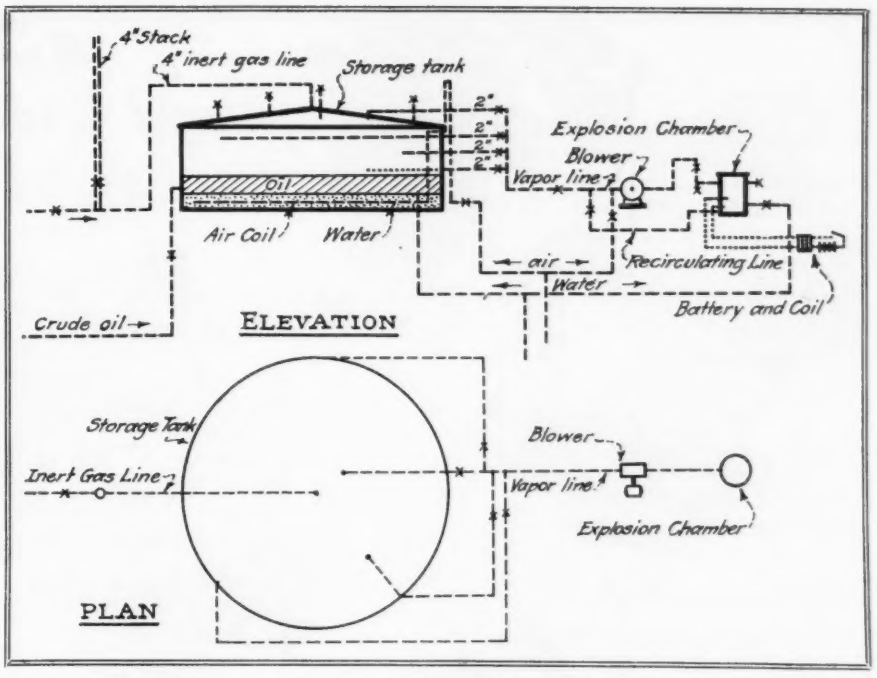


Fig. 2—Diagrammatic sketch of equipment used in testing explosibility of tank gases

Build Plant in 28 Days

LOS ANGELES, April 18.—A third absorption plant was placed in operation on April 12 by the State Gasoline Corporation at Long Beach. It was erected at Elm & Columbia Streets by the J. A. Campbell Company, and Campbell equipment was used throughout.

Work on this plant, which was designed for 20,000 gallons per day, began March 15 and everything was ready for operation on April 12, which is said to establish a time construction record for plants of this capacity. It is a permanent installation in every respect, according to J. A. Campbell.

Three noteworthy features are embodied: Both inlet and outlet gas streams are put through Mist-D-Fier scrubbers; the sprays in the cooling tower are arranged in a unique manner for obtaining greater cooling efficiency; the reflux heater on the reflux going to the fractionating section of the evaporator is of advanced design.

The United States Cast Iron Pipe & Foundry Co., Burlington, N. J., is now making 18-foot lengths of de-Lavaud centrifugal cast iron pipe in all diameters, 4 to 12 inches inclusive.

A battery of casting machines for the production of this pipe in 18-foot lengths is now in operation at the Birmingham, Ala., plant, and the product will measure up to the standards established by the company in its other pipe.

The equipment for handling this length of pipe need be no different from that used in handling 12-foot lengths of cast iron pipe.

Wind Break Built to Fight Fire

SEMINOLE, Okla.—In case of fire in company camp, the Carter Oil Co. brings into service a specially built windbreak, made of old pipe welded together as a frame and covered with sheet steel. It is run up on the windward side of the burning building, its jointed top section swung into position and held upright by means of the chains shown in the picture. In that position, the shield is higher than any ordinary camp building and will keep the wind from fanning the flames.

The windbreak pictured here is stationed in the Carter's camp just north of Seminole, on the road to Searight field. This camp, like many others, is enclosed by fence. Gaps have been left in the fence so that this shield can be moved in quickly to any building. The arrangement of cross-piece on the pipe tongue enables a number of men to take hold and pull the shield, or it can be towed behind a truck. The company has two of the affairs at the camp and they together have enough area to almost smother a fire.

The wind-break ready for an emergency

Oil Well Supply Co., Pittsburgh, Pa. has developed the Oilwell releasing sucker rod socket embodying improvements which provide for safety and speed in fishing for broken sucker rods.

The chief feature of this socket is the speed with which the sucker rods can be released after they have been pulled from the well. Two squares are provided so that two monkey wrenches can be used instead of the usual monkey wrench and pipe wrench.

Unit slips are used in this device and a separate set is provided for each size of sucker rod. The chief advantages of this arrangement are that the machined outside and inside tapers make complete contact when the socket is under load, the danger of one section setting above another is eliminated, and handling is made easier when changing slips.

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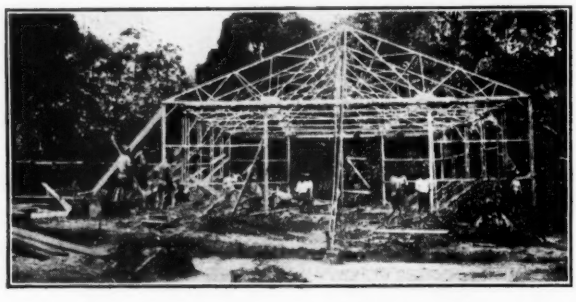

An IDECO standardized steel warehouse being erected by native labor in Trinidad near the San Francique and Fyzabad oil fields

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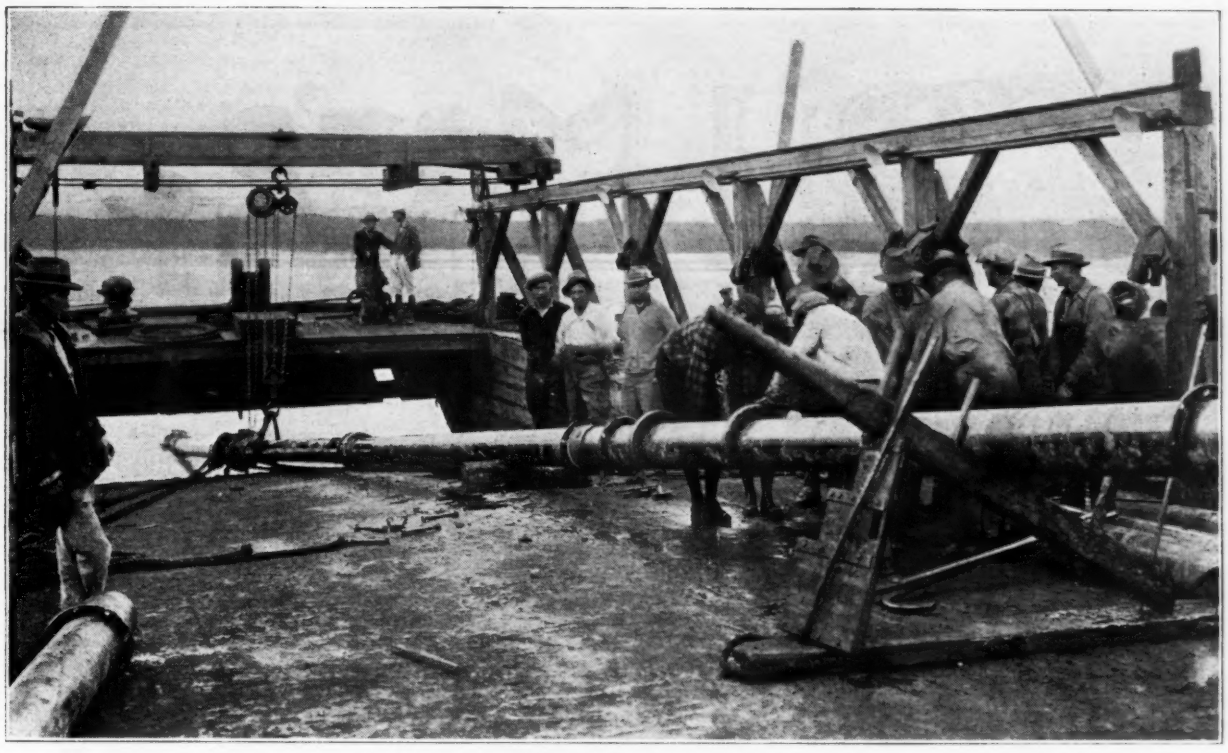

Laying water lines at Mississippi river crossing

208 Miles of 18-Inch Gas Line in 92 Days Is Record on Memphis Project

By Walter R. Hart*

Written Exclusively for National Petroleum News

ON DECEMBER 28 two favored youngsters opened a gate valve and natural gas for the first time flowed into the mains of Memphis. This represented the culmination of a project which had been under way for four months and employed 2000 men. The arrival of natural gas cut the gas bills of the people of Memphis in half, and made the ideal fuel available to the industries of that city.

The Memphis Natural Gas Co. buys gas under long term contracts from the Industrial Gas Co. and other companies having large reserves in the Monroe field of Louisiana and delivers it at a metering station near city limits to the Memphis Power & Light Co. for city distribution and for its electric generating station. Gas is also sold to the Arkansas Power & Light Co., the Mississippi Power & Light Co. and the Louisiana Power & Light Co. at some 40 towns along the 208 miles of its 18-inch line.

Actual construction of the line required only 92 days. Exceptionally good weather conditions helped to make this record possible, but due credit should be given Williams Brothers, Inc., for the ample and high grade construction equipment provided. Eight crews were at work during the greater part of the construction period, some crews laying as much as a mile and a half a day when conditions were favorable.

Each crew was equipped with a ditching machine, a pipe handling machine, and a backfiller, and hand labor was eliminated as far as possible. Across many miles of cotton fields the ditchers had easy going, but to offset ideal conditions there were many stretches of gumbo and a number of swampy sections where mats of tree trunks had to be laid to keep the machines from sinking out of sight.

A telephone line parallels the pipeline with telephone boxes installed at each of the 34 main line gates. A three pair armored cable was used to cross the Mississippi. On this job post holes were bored by machine and poles set at a rate of five miles per day.

*Staff of Ralph E. Davis, Engineer, New York.

Pipe Covering

All pipe laid was thoroughly protected against corrosion. The pipe was first primed at the mill and after stringing was treated with one of two kinds of coating depending on the nature of the soil, as determined by a corrosion survey made by Dr. H. K. Ihrig. In relatively dry soil the pipe was given a coat of Du Pont Asphalt Emulsion, and in all places where the soil was likely to be wet for the greater part of the year the pipe received a second primer coat and a coat of Bitumastic Enamel.

Both the canvas band and roller rig were used in applying the coating. Little difference was observed in the time or cost of application of paint by either method but the use of roller rigs showed a saving in the amount of paint used. The couplings were daubed with brushes.

An interesting fact in this connection was the development of a new method for painting couplings, always

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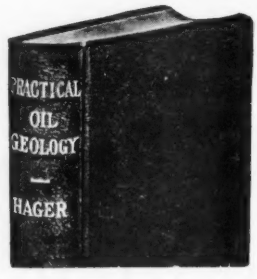

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Dorsey Hager, petroleum geologist and engineer, has just come out with his new fourth edition of PRACTICAL OIL GEOLOGY.

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a difficult job to do properly by hand. The new method consists of a close fitting metal container made in three hinged sections which clamp tightly to the pipe and enclose the coupling. A flexible metal pipe connects the bottom of the container with the kettle in which the enamel is melted, and a hand operated gear pump on the kettle fills the container, flooding the coupling with enamel. As soon as the enamel appears in a riser at the top, the pump is reversed drawing the surplus enamel back to the kettle.

The whole operation requires less than two minutes per coupling and makes a perfect job. The operation is continuous, as the kettle and a wagon carrying drums of enamel and fuel are drawn from coupling to coupling by a team of mules. Where this apparatus was tried out four men thus equipped seem to be capable of replacing the 20 to 30 coupling daubers of a crew.

Dollar brushes often last no more than half a day and this item alone represents quite a saving. The new method is the invention of L. R. Rogers and the patent rights are now owned by the Wailes Dove-Hermiston Corporation.

Principal Engineering Features

A large part of the line lies in country which was under water during the flood of 1927 and for this reason special precautions were taken against failure during possible future floods. The pipe was buried with a cover of three to three and a half feet. Where it crossed places which were frequently or permanently swampy iron clamps or blocks of concrete were used liberally to weight the pipe. For the same reason the compressor stations were located on sites which were above the flood level of 1927.

East of the Mississippi River the line crosses four small rivers and nine railroad lines, and runs through country which is crisscrossed by a large number of canals, ditches and bayous. These conditions called for special instructions to foremen covering many points along the line and, contrary to common practice, typed instructions and blueprints of sections were issued to foremen and inspectors to show elevations of ditch every 20 feet, number of joints to be welded, location and amount of bending required, etc.

This method proved well worth the time expended in preparing these instructions. It saved time on the job, prevented excessive deflection so common in going under obstructions, and furnished an accurate record of the location of the pipe at all points having more than normal cover.

Old Pat Murphy, whose pipeline career started about 50 years ago, volunteered his opinion on the subject as follows: "We used to dig a ditch, then bend the pipe and then make the ditch fit the bend, but this way, while one gang digs a ditch like the 'profeel' the foreman and another gang bend the pipe as per instructions, and first time in the ditch —be gad—it fits!"

Crew laying main line

Mississippi River Crossing

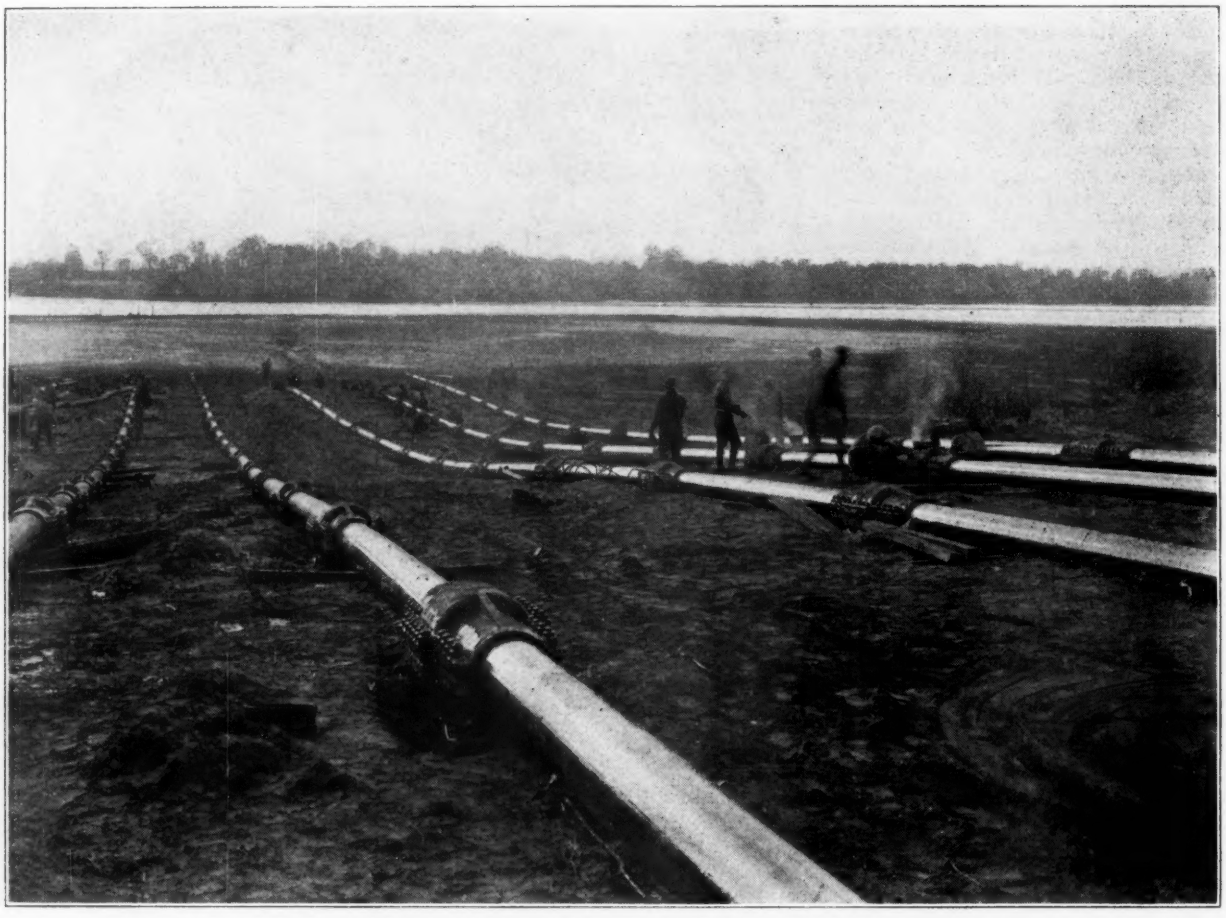
The Mississippi River Crossing proved the most serious problem connected with this undertaking. Work commenced in November at which time the river is normally at its lowest level. Specifications called for four 10¾-inch lines. The headers, with one spare gate in each were placed 400 feet back of the levees.

Only 3350 feet of the two miles between headers were under water at the time of construction, which includes two small lakes between the river channel and the east levee. The rest of the crossing lies through willow brakes where the line was connected up on dry land.

At the point selected for the crossing the channel lies near the west bank of the river and here, with a depth of a hundred feet and a swift current special means had to be devised for holding the work barge to its proper course as the 10-inch lines were paid out. For this purpose six 10-ton concrete blocks were sunk in the channel as anchors from which the work barge could be warped into its successive positions along the particular curved line indicated for each string of pipe.

As the work barge moved along, its position was checked by a surveyor on each bank of the river. The anchor cables would not have held the barge against the current so a large tug was kept at all times pushing upstream against the work barge to take most of the strain off the cables.

Heavy screw pipe was used for the river lines with collar leak clamps and 58-inch, 1800-pound river clamps. A mud flat 800 feet wide on the east side of the channel offered further difficulties. So deep and soft was the mud that the two men who carried a light line across it required several hours to make the trip. Four



Lines on east bank of Mississippi river, showing application of 1800-pound river clamps

strings of pipe to cover this distance were assembled on dry land and with a stone boat under the river end of the pipe, a tractor pushing and a river tug towing, the successive sections were moved over the mud flat to meet the river lines.

Work on the river lines was carried on night and day, about 48 hours being required to lay each line. At no time was navigation on the river interfered with in any way.

Line Testing

The line was blown and fire tested in 10-mile sections at 200 pounds pressure, and a few leaks repaired. It was then packed to 375 pounds and a leakage test made with a deadweight pressure gauge tester, following methods devised by the U. S. Bureau of Mines. Gates were closed to divide the line into four sections for testing. A check test was made on the whole line with all but the end gates open and a 24-hour pressure drop taken.

The leakage from the line was calculated at 54,000 cubic feet per year per mile per hundred pounds absolute pressure for three-inch equivalent line. This figure is comparable to the Bureau of Mines standard of 200,000 cubic feet for average pipeline in good condition, and for comparison with a 100,000 cubic foot standard. A number of minor leaks were repaired after the line was tested and put in operation.

Compressor Stations

The market survey which served as a basis for the design of this line called for delivery in Memphis of an amount of gas gradually increasing to a maximum of 84 million cubic feet per day. These maximum requirements, with due consideration given to construction and operating costs, called for an 18-inch line with four compressor stations.

The estimated demand in three years is 64 million feet which will require two compressor stations, one at the field and the other midway of the line. These stations are now under construction, one at Guthrie, La. nearing completion, and the other at Benoit, Miss., to be completed early in April. The other two stations will be built when the increasing market for gas makes them necessary.

Each compressor site includes about 25 acres and provides ample space for the main compressor building, a building for auxiliary equipment, water storage and cooling towers, warehouse and machine shop and seven or more residences for employees. stations are Worthington 24 x 36-inch The main compressor units in these horizontal tandem double acting engines, two twin and one single engines at Guthrie developing 3125 H.P. for 200 to 400 pound compression, and two twin and two single engines at Benoit developing 3750 H.P. for 150 to 400 pound compression. Provision is made for later additions to the power plant at Guthrie.

The foundation provided for the engines is a 55 x 80 foot reinforced concrete mat three feet and seven inches thick resting on piling spaced five feet apart each way. Concrete piers on this mat carry the engines. There is no connection between this mat and the building foundations through which vibration could be transmitted.

The engineering work on this line was done by Ralph E. Davis, Engineer. Ford, Bacon & Davis, Inc., was awarded the contract for the complete job and Williams Brothers, Inc., constructed the pipe line, all three organizations having headquarters in Greenville, Miss. A. M. Lockett & Co. built the compressor stations and Dwight Chapin, Jr., the telephone line. The engineer in charge for Ralph E. Davis, engineer, was Lyon F. Terry. Those in charge in the field were J. R. Bahan, F. A. Dickins, and Dewey J. Sabin.

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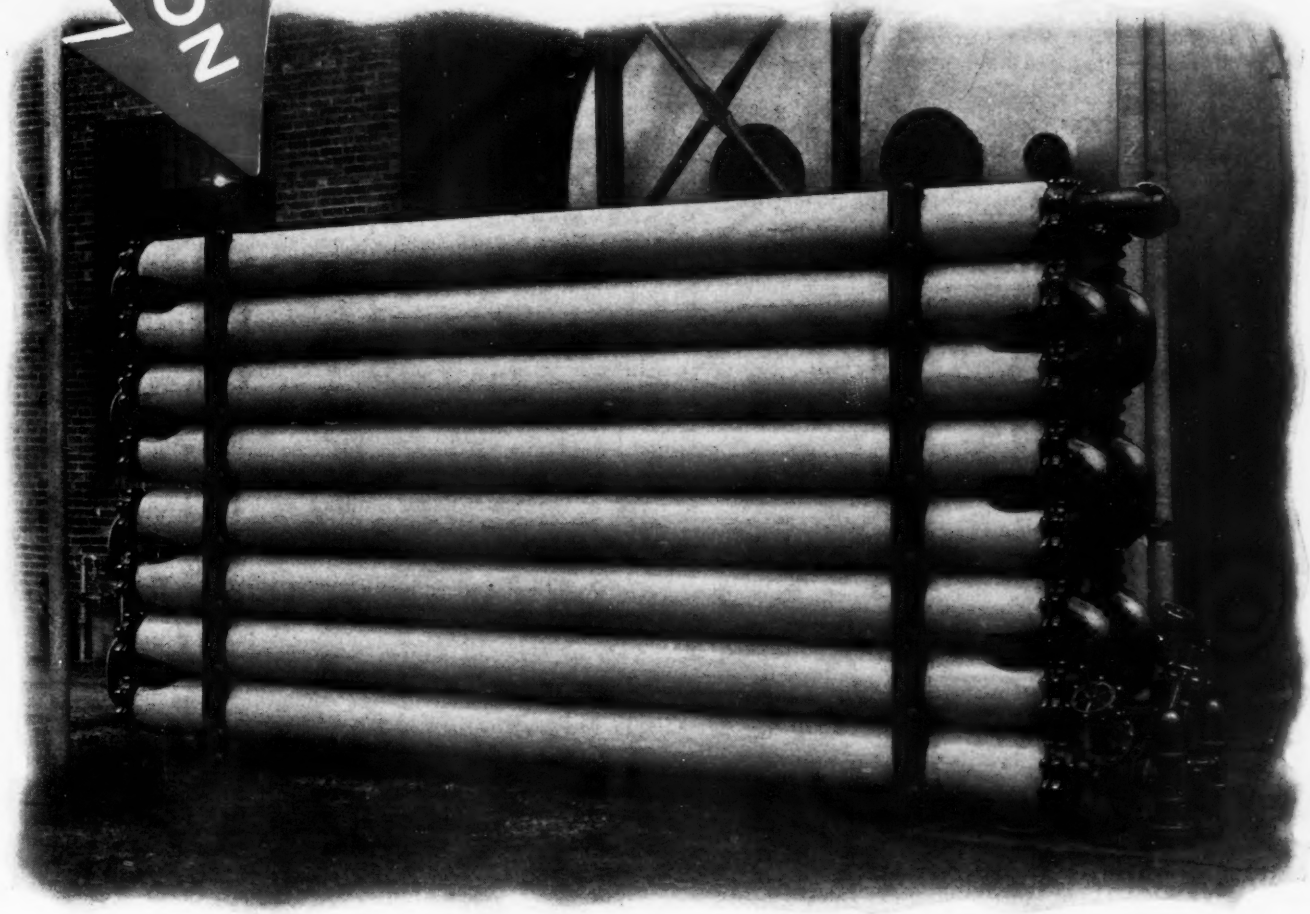
LATION

Illustrations through courtesy of Louisville Refining Co. Read the article in the January issue of "The Refiner" on page 75 which describes this unique Installation in detail.



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Visiting Around the Refineries

By Paul Truesdell

National Petroleum News

WORK is going ahead rapidly on the refinery of the Shell Petroleum Corp. on the ship channel near Houston, according to Dr. F. W. L. Tydeman, head of the manufacturing department of the company. The plant will have a crude capacity of 20,000 to 24,000 barrels a day and is to run on West Texas crude to be brought down by pipe line.

It is expected that the plant will start topping operations sometime in the early summer.

Primarily the refinery will consist of three Badger topping and fractionating units and six Dubbs cracking units of the latest type, equipped with carborundum furnaces.

R. B. High, who is temporarily in charge of the Norco, La., plant of the New Orleans Refining Co., will have charge of the Houston refinery when it is completed. Mr. High was superintendent at Norco for some time but was called to take charge of the Arkansas City plant when Dr. Waser was transferred from that plant to the East Chicago refinery.

Mr. High remained in charge of the Arkansas City plant until December, 1928, when he became superintendent of the Wood River refinery.

E. H. Schippers, who came from the Shell of California plant at Wilmington, Calif., and was assistant superintendent at the Wood River plant has now been made superintendent. R. C. Roberts who was formerly assistant superintendent of the East Chicago refinery is now superintendent at Arkansas City.

P. E. Foster, who was formerly superintendent at Arkansas City is in Borneo on a special job. When he returns about June 1 he will take charge of the Norco plant. The Houston plant will also serve as a coastwise shipping station for crude brought down by pipe line.

* * *

FRANK E. HOLSTEN, vice-president of the Barnsdall Refining Co., in charge of refining operations, is authority for the statement that a Gray tower for treating cracked gasoline with fullers earth in the vapor phase at the company's Barnsdall, Okla., plant has treated to color 22,000 barrels of gasoline per ton of earth and is still running.

By a method worked out at the Barnsdall plant, it seems that treating can be carried on with the same clay indefinitely. At least the limit of the clay has so far not been reached. The plan is to clean the clay when necessary, without removing it from the tower.

The towers operate with a pressure at the inlet of about 35 to 38 pounds. There is a considerable pressure drop through the tower so the outlet line is under about 30 pounds pressure. The method of cleaning, which is resorted to whenever the color of the gasoline stream goes off, is to open the valve releasing the pressure at the outlet from the tower. The vapors are blown through the clay to the slop tank for a few minutes. Then the pressure is restored and the gasoline shows a water white color again.

The vapors blowing freely through the clay seem to clear out the polymers and impurities that stick to it and leave it in its natural state of purity again.

The Gray towers at the Barnsdall plant are hooked up to take the gasoline vapor streams from Cross cracking units. The gasoline is finished, except for doctor sweetening as it comes from the towers.

* * *

AT THE industry conference called by the American Petroleum Institute March 15 in Washington to discuss proposed changes in government gasoline specifications, it was stated that the army buys some aviation gasoline on an aniline test that is not included in the official tests in Bureau of Mines Technical Paper 323B. Questions were asked about this test. Here is the prescribed method:

"The critical temperature of the solution with aniline after nitration shall not exceed 62.0 degrees C.

"Method for determining the temperature of solution. Two hundred cubic centimeters of gasoline are nitrated with 50 cubic centimeter portions of a mixture of 3 parts H_2SO_4 (specific gravity 1.84) and 1 part HN_3 (specific gravity 1.41) until no more heat is developed. (Plunge into ice water if the mixture becomes too hot for the hands). Wash with concentrated H_2SO_4 until free from nitro compounds, then once with distilled water, then thoroughly with 20 per cent caustic soda solution, followed by distilled water till all caustic is removed.

* * *

"Dry the resultant gasoline over anhydrous calcium chloride and determine the critical temperature of solution as follows: Place 5 cubic centimeters of chemically pure redistilled aniline in a tube the same as the one in the A.S.T.M. paraffin wax melting point apparatus (Serial D 27-22) and add 0.5 cubic centimeter of the gasoline nitrated as above. Close the tube which includes the thermometer and stirrer and immerse in water at a temperature above which complete solution will occur. Allow the water, tube and contents to cool slowly with stirring and note the temperature at which decided turbidity occurs. Repeat this process with 0.5 cubic centimeter additions of gasoline until the solution temperature reaches a maximum. This maximum temperature is the critical temperature of solution of the nitrated gasoline."

* * *

ANOTHER thing that is being done at the Barnsdall refinery is to increase the scope of use of acid sludge as fuel. This has been done successfully at the plant for some time and burners for handling it are now being installed under other pieces of equipment.

The Barnsdall engineers have worked out a method of treating the sludge chemically which eliminates the necessity of keeping the sludge hot and agitating it all the time. After the sludge is treated it is mixed with about its bulk of fuel oil and stored until wanted. It has stood as long as six months with any settling out of the carbon or coke like material, Mr. Holsten says.

The sludge fuel is burned at the plant without the installation of expensive handling and firing equipment.

Vertical Tube Still Has Long Life And Develops 70% Efficiency

By Luis de Florez*

IN GENERAL terms, the vertical tube heater comprises what may be termed a radiant section and an economizer section. The radiant section is constructed in the form of a vertical cylindrical shell, the walls of which are lined with vertically disposed tubes which are symmetrically spaced with respect to the center of the cylinder.

A burner admits fuel at one end of the vertical chamber and the products of combustion are discharged at the other end and carried to the economizer section through a suitable flue. The economizer section may consist of a more or less conventional tube still arrangement * * * or may, in some cases, be an air heater which would replace the tube bank.

As will be seen from the accompanying illustrations, the heater readily adapts itself to different requirements. The firing, for instance, may be effected downwards or upwards according to the duty intended.

Referring to Fig. 1, it will be noted that this shows a downshot type with the burner placed at the top discharging into the combustion space below. The economizer section is disposed vertically and the horizontal flue connection between the two sections continues into the base of the stack to provide an outlet for emergency or for scavenging the setting.

In operation, the flame and products of combustion travel downward in a path generally parallel to the axis of the tubes in the radiant section and upwards through the economizer and thence to the stack.

It will be noted that the vertical section is formed by a cylindrical steel shell supported on columns and provided with a lining of insulating brick and fire brick. The upper portion of the shell is provided with an angle section turned inward which supports the weight of the tube sheet and tubes. This is allowed to slide on the surface of the supporting section to compensate for expansion.

The tube sheet itself is composed of a number of sectors, usually of cast metal, rigidly connected to an inner ring made of boiler plate uniting them into a continuous circular shape. The tube sheet is perforated to permit the insertion of the tubes which it supports and is so designed as to be self-supporting. It will be noted that, owing to its circular form, it cannot break inwards without stressing the inner annular ring of metal which joins the casting together, at the same time it is free to move laterally as a whole.

THE accompanying article was presented by Mr. de Florez at the annual meeting of the Society of Mechanical Engineers held in New York, April 16. It is published here somewhat abridged. The complete paper will be published in the Transaction of the American Society of Mechanical Engineers following the meeting. This is the vertical still used in connection with the de Florez vapor phase cracking process. The process is owned by The Texas Co.

The burner or group of burners is supported at the center by radial members connected at one extremity to the tube sheet supporting ring and terminating in a smaller ring which holds the burner housing and draft box. A flat arch is suspended from the radial members and forms the top of the combustion chamber extending from the opening provided for the burner to within a few inches of the tubes themselves.

The base of the chamber is provided with a circular opening of smaller diameter than the chamber connected with the flue, which provides the outlet passage for the products of combustion.

A second tube sheet in the form of an annular ring is provided at the base of the chamber with perforations corresponding to the top tube sheet. This lower tube sheet is supported by the shell on the outside, also by the structure formed by the outlet flue on the inner side.

In this particular design the whole of the weight of the tubes is taken by the top tube sheet, the bottom tube sheet acting merely as a support for the lining of the shell and the refractory material for its own protection. The tubes are thus permitted to expand and contract freely in a vertical direction and their weight tends to keep them straight, eliminating the tendency to sag.

It will be noted in this arrangement that the position of the tubes is such that they are substantially out of the direct path of the products of combustion, which tend to channel through the center, at the same time they are in full view of the flame. The return bends or junction boxes connecting one tube to the other are shielded from the fire by the tube plates and housed in by side plates and removable covers which provide access for cleaning.

The burner itself is usually a combination mechanical oil and gas burner provided with forced draft. In some cases where a single burner is not desirable, a number of jets may be placed near the center in symmetrical fashion always concentrating the flames as far as possible toward the center of the cylinder. Forced draft is usually provided on these burners to permit this concentration and also for the purpose of providing a positive control for the amount of air required for combustion.

The tubes are usually connected in series to form a single coil to insure positive flow of the oil but they can be divided to provide multiple flow if desired. In the series heater, the oil is admitted to the top of the economizer bank, passes downward progressively toward the hotter zone and from thence is led to the inlet tube of the vertical section, around the circle and out.

IT WILL be seen from this general arrangement that all the tubes in the vertical section receive a large amount of radiant heat while, due to their symmetrical arrangement with respect to the fire, they all receive an approximately even amount of radiation. Of course, as the oil becomes heated and the temperature of the tubes increases, the hotter tubes will receive somewhat less heat than the cooler tubes which is advantageous as it relieves the heat load on the tubes which might be expected to give the most trouble.

The absorption of heat in the vertical section is sufficiently great to reduce the temperature of the gases delivered to the economizer section to

*Consulting Petroleum Engineer.

1200 to 1400 F., a temperature at which they can be readily handled with a conventional setting.

With the large amount of "radiant absorbing" surface in the vertical section, the products of combustion are cooled very rapidly, making it possible to maintain a high heat gradient between the flame temperature and the average temperature of the gases surrounding the tubes. This condition enhances heat transfer without endangering the tubes.

Actually, the temperature at a point 10 to 12 inches away from the tube toward the center of the furnace will seldom exceed 1500 F., which appears to be a safe limit for tubes carrying oil. In existing installations the temperatures usually run materially lower than 1500 F. and it has been found that the variations in temperature in the length of the chamber are seldom over 1000 F.

It is probable that the fuel is burned progressively, to some extent, which is suggested by the fact that CO_2 readings are usually lower at the top of the chamber than at the bottom.

Another effect resulting from the rapid absorption of heat is evidenced by the reduction of the volume requirements for combustion made possible by the correspondingly rapid contraction of the combustion products. In the conventional pipe still it is seldom possible to liberate more than 8000 B.t.u. per hour per cubic foot of combustion space and it is probable that 6000 B.t.u. would be a fairer estimate for the average setting.

It has been possible to liberate from 15,000 to 16,000 B.t.u. per hour per cubic foot in a tube still of the type described and to continue to do so over long periods of time without endangering the tubes or interfering with combustion. It seems probable that this figure can be materially increased.

Doubtless these figures seem moderate when compared with boiler practice. In oil heating, however, they represent substantial progress.

In oil heating, where tube temperatures are usually higher than in steam practice and where there is likely to be deterioration of the surface due to oxidation, another advantage results from operating with minimum excess air, apart from the standpoint of economy. The life of the tubes is materially increased by reducing the amount of free oxygen in the gases; and although there appears to be a slight oxidation at high temperatures, the benefits of running with a minimum of excess air are very marked.

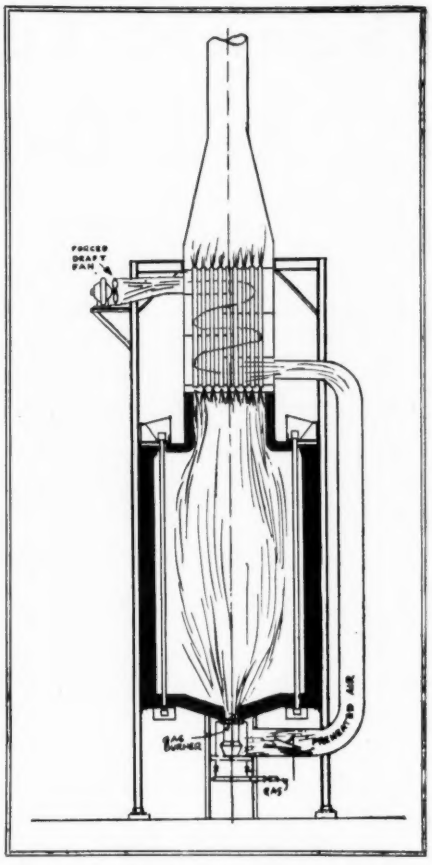

Fig. 2—Up-shot de Florez heater with air heater

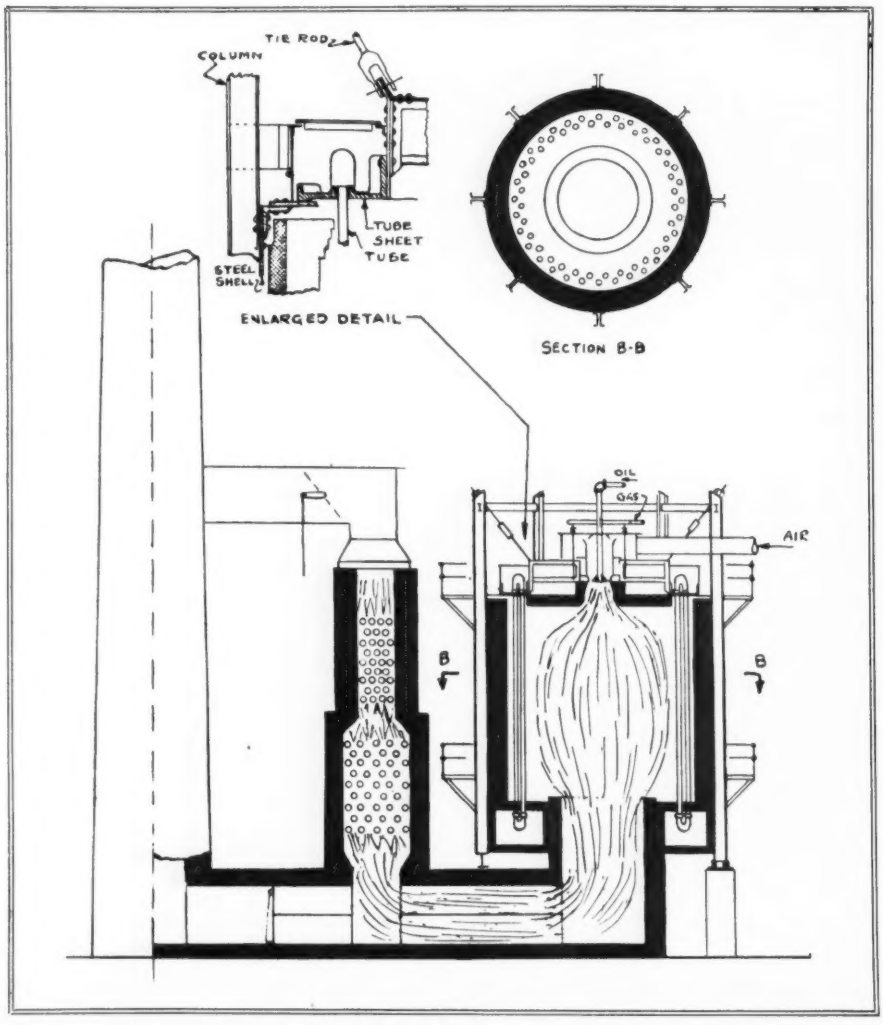

Fig. 1—Down-shot de Florez heater with tubular economizer

In one particular installation made on a high temperature cracking plant, tubes have been in service eight or nine months without substantial oxidation when running at oil temperatures of 1050 to 1100 F. and where the outside skin temperature of the tube is materially in excess of this figure.

There has been to date very little occasion to effect repairs on brickwork on furnaces built, in fact the brick work of the lining, flues and economizers showed practically no effects of heating. Only minor troubles have been encountered in the top of the combustion chamber on the suspended arch where it was found necessary to provide rather liberally for expansion.

In practice it seems desirable to operate the heater with a pressure of a few hundredths of an inch less than atmospheric at the tube sheet; this causes a slight leakage inwards at the top, thereby cooling the upper part of the structure and the top arch.

With regard to draft conditions, it is interesting to note that on the

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first design made of this type of still it was considered necessary to provide for a comparatively high draft intensity because of the counter stack effect in the vertical section. In one installation the calculations for draft resulted in the choice of a stack 125 feet high and even then some misgivings were felt as to whether there would be sufficient draft to operate the heater.

Curiously enough, it was found that not only was there sufficient draft for the rating desired but there was a considerable excess which was puzzling for a time. Observation showed, however, that with a combustion chamber the top of which was about 40 feet off the ground, the counter stack effect amounted to a little less than ¼ inch of water, whereas it had been calculated to be considerably greater.

It was found that the discrepancies arose from the fact that in the original calculations the average temperature of the chamber was assumed to be 2000 F. whereas in actual practice the average temperature was below 1500 F. * * *.

It appears from experience that heaters of the downshot type can be operated without unusual provisions for draft which were thought at first to be necessary.

In order to provide adequate surface in the combustion chamber, it is usually customary to stagger the tubes to form two rows in such a way that the inner row does not shield the back row from the flame. This usually leads to a staggered arrangement which is very flexible and permits varying the surface with standardized shells and obviates the necessity of making numerous general designs for different requirements in duty.

The addition of one foot on the diameter gives roughly three feet on the tube sheet which leads to economy in the large sizes. Visibility of the tubes, which is important especially in cracking, is provided by peep holes, in the side of the shells and the tubes can be viewed by looking diagonally across the furnace from various points symmetrically disposed in the shell * * *.

Access to the tubes for cleaning is provided by removable covers enclosing the top and bottom tube space. The junction boxes connecting the tubes are provided with the usual removable plugs to permit turbining the tubes in place. This operation is carried out from top to bottom and, due to the disposition of the tubes around the circumference of the combustion chamber, a large number of cleaners can be employed simultaneously if desired without interfering with each other.

With certain types of junction boxes dirty tubes can be withdrawn by means of an overhead trolley or crane and replacement effected in remarkably short time. Rapid cleaning is often important since the furnace is usually connected to a large amount of equipment which must remain idle during cleaning periods and therefore non-productive. * * * * * * The vertical still controls with great rapidity at the same time it appears to be unusually stable. The moderate variations of fuel required to maintain desired outlet temperatures do not seem to affect the percentage of CO_2 to any great extent and the control of the heater can be normally effected without changing the forced draft pressure. It is interesting to note that if the CO_2 falls off, more load is put on the economizer and whereas the outlet temperature of the heater may remain constant, the outlet temperature from the economizer to the vertical section may vary considerably. In this manner, changes in combustion conditions may quickly be noticed on the control board of the refinery unit and corresponding corrections made. Over two-thirds of the work of the heater is done in the vertical section, the remainder in the economizer.

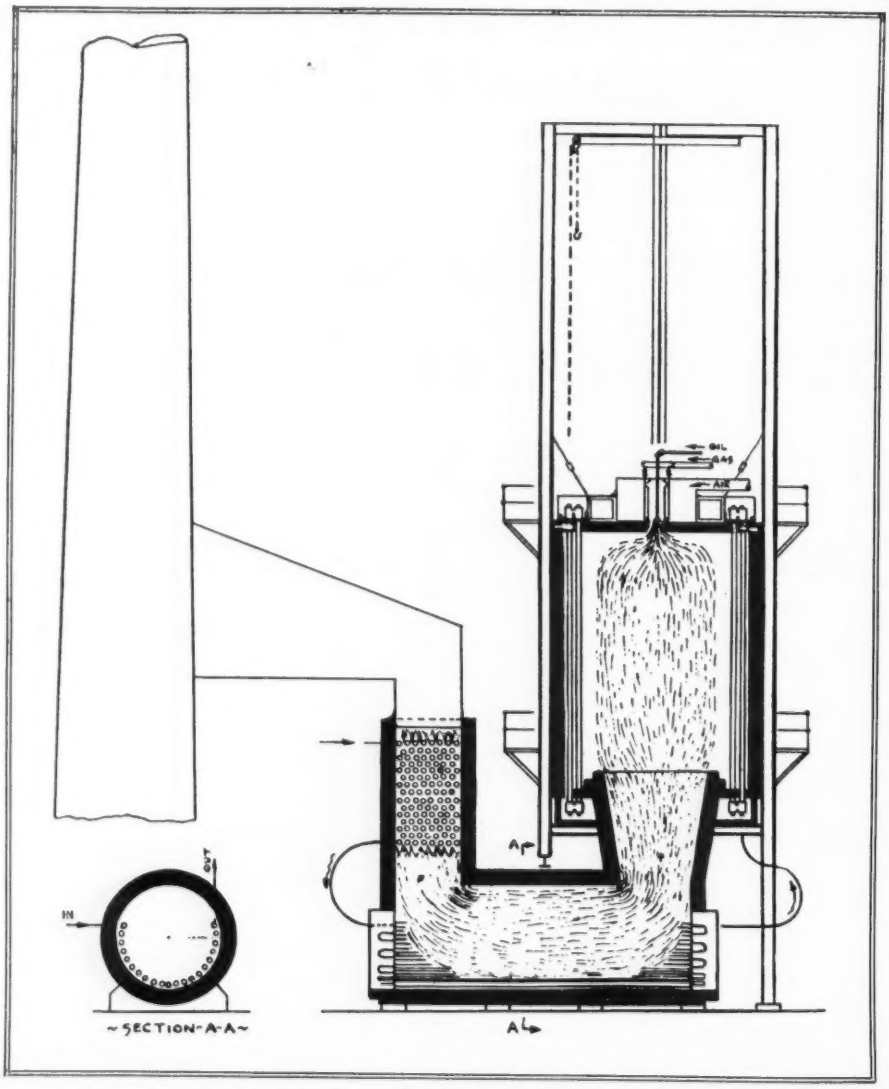

Fig. 3—Down-shot de Florez heater with secondary radiant section

UNDER service conditions an overall efficiency of 70 to 75 per cent can be readily obtained and it is possible that even better results can be secured when oil inlet temperatures are not too high. * * *

Fig. 2 illustrates an upshot heater in which the economizer section has been replaced by an air heater, shown more or less diagrammatically above the vertical section. The purpose of the air heater is to reclaim heat from the stack gases and transfer to the air required for combustion.

With pre-heated air it is obvious that higher combustion temperatures will be obtained and therefore more heat will be made available for transfer to the tubes by radiation. This type of heater, which is now being constructed, is of considerable interest since it carries out more fully

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NATIONAL PETROLEUM NEWS
700 Penton Bldg.
Cleveland, Ohio

the idea of transferring heat from a source at high initial temperatures.

It will be used in connection with a process where the inlet oil temperature is about 800 F., a temperature which would render a tubular economizer section of little value.

The mechanical construction of the heater is very simple requiring little ground space and it seems probable that it will lead to considerable economy in materials. The comparatively short length of travel of the oil should permit high velocities without undue pressure drops, thereby enhancing the transfer rate of heat from metal to oil and reducing the steam required for pumping—always a large item. * * *

Fig. 3 shows a more recent modification of the type of heater first described. The chief point of interest in this design lies in details of construction, in particular in the use of the horizontal flue to form what may be termed a secondary radiant section. The flue, as will be seen. consists of a cylindrical shell lined with refractories, the bottom half of which is screened by longitudinal tubes disposed on a semicircle.

The use of this section provides for additional radiant surface, facilitates the oil connection between the outlet of the economizer to the inlet of the vertical section, and reduces the amount of foundation work required by eliminating the necessity of a mat on which to build a flue.

All the loads in this design can be concentrated at desired points which will obviously simplify foundations, particularly where piling is required. This is often an important item: It seems at times as though executives of oil companies conspire to select refinery sites to test the skill of their engineers.

Letters to the Editor

National Petroleum News

Dear Editor:

On page 72 of the November 21 issue of the NATIONAL PETROLEUM NEWS, you called attention to the treatment at the Arro Oil & Refining Company of a pressure distillate from a specific kind of cracking stock, and concluded from this particular case that cracking was not popular or extensive in Montana because of the character of the oils available there. I believe this question deserves a little more consideration than you have given it, and therefore I am giving some further facts upon the subject which will, no doubt, be of interest to you and your readers.

The particular charging stock from which the pressure distillate you referred to was obtained was a topped crude from Oregon Basin field, containing 3.22 per cent of sulfur. With a crude of this kind, it is a natural and unavoidable thing that the cracked distillate should contain a relatively high percentage of sulfur. This holds for any cracking process. This particular pressure distillate contained 1.4 per cent of sulfur. This, of course, is an individual case and by no means represents the average condition, as I will show later.

The pressure distillate from this crude requires an average of 6 pounds of acid per barrel of oil to produce a water-white, negative-corrosion, negative-doctor, and light-stable gasoline. It is true that a larger quantity of acid is required to reduce the sulfur content to meet the requirements of some state specifications.

Here again there are two sides to the question—one being whether the specifications are in error in fixing an unproved maximum for the sulfur content in gasoline, and the other the fact that the average refinery, as is true for the refinery in question, produces a large proportion of straight-run gasoline from relatively low-sulfur crude, which when blended with the pressure distillate and treated requires a greatly reduced quantity of acid to produce a blend having a sulfur content of 0.1 per cent. Of course, the chief benefit from refining the gasoline in this way is to overcome the disadvantages of the use of large amounts of sulfuric acid in reducing very greatly the solution and polymerization losses.

The following table shows the crude oil production of the important fields of Wyoming and Montana with the corresponding sulfur content of the crude.

	Production Bbls. per day	% S
WYOMING		
Salt Creek	40,170	0.18
Oregon Basin	5,600	3.22
Lost Soldier	4,000	0.23
Big Muddy	2,700	0.25
Grass Creek	2,200	0.14-2.72
Lander	320	2.9
MONTANA		
Kevin Sunburst	8,300	1.47
*Pondera	2,000	-

Cat Creek	1,500	0.35
Lake Basin	530	-

*It is the writer's understanding that the sulfur content of Pondera crude is about the same as that of Kevin Sunburst crude.

The Wyoming crudes have been shown in addition to those of Montana because these crudes will be available for cracking in Montana, and in fact in the particular case which was cited, the crude namely, Oregon Basin, was from Wyoming.

Inspection of the above table shows that the major portion of the production in Wyoming and Montana available for cracking is of relatively low sulfur content and hence will produce a pressure distillate giving no trouble whatever in refining with relatively small quantities of acid, and that in reality the high sulfur crudes which will require large amounts of acid for desulfurization represent a relatively small proportion of the total.

The Montana crudes proper are all relatively low in sulfur and will give no trouble, so far as the treating problem is concerned; and of the Wyoming crudes, approximately 75 per cent of the total production offers no problem whatever in quantity of acid required for desulfurizing the cracked distillates. Hence it should be quite clear that the question of cracking in Montana is only one of natural development and that the question of desulfurizing the cracked distillates on the average is an incidental and minor one only.

Yours very truly,

(Signed) J. C. Morrell
Universal Oil Products Co.

Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, one of the oldest manufacturers of valves, fabricated piping and general power house equipment, made changes March 1 in its management and operating personnel.

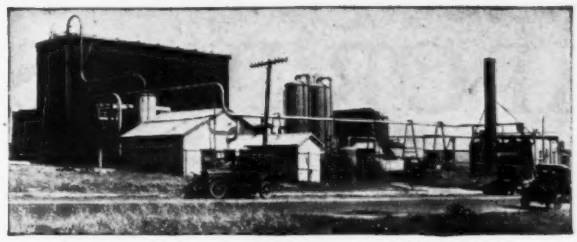
C. A. Anderson, Jr., for many years vice-president and sales manager, is now president and director of sales, and A. V. Wadsworth, formerly secretary-treasurer and manager of the Westcott Valve Co., East St. Louis, is now vice president and general manager.

Mr. Anderson has been with the company in various capacities for over 20 years. Mr. Wadsworth's experience began in the employ of the National Transit Co., Oil City, and he was later with the Buckeye Traction Ditcher Co., Findlay, O.

The new officers are planning an aggressive campaign in the Mid-Continent and Coastal oil fields.

Other changes in the company's staff include Blake V. Fisher, who becomes district manager at Dallas, and W. H. Arnold, who is now manager of the eastern division.

Billions of Bubbles



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This constitutes No. 7 of a series being shown of plants built by J. A. Campbell Company in 1928.

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Cracking Plants Now Being Designed For Individual Plant Needs

By Paul Truesdell
N. P. N. STAFF WRITER

CLEVELAND

DEVELOPMENT during the past year in the art and practice of cracking oil to make gasoline has been like the performance of a three-ring circus; that is from the standpoint of the onlooker.

So much has been doing in various phases of the art, as there is so much doing in different parts of a circus tent, that it is impossible to keep an eye on it all.

Vapor phase cracking has grabbed off the center of the stage during the past few months. And while all eyes have been turned with eager interest on this new art, perhaps some of the important activities that have been going on in connection with liquid phase cracking have been rather neglected.

As a new performer does in the circus, so the new refining method has eclipsed the old reliable in public interest.

Not that the vapor phase development is not worthy of the refiner's attention. It is, but much progress has been made also in liquid phase cracking. There are some who object to the attempt to draw a line between liquid and vapor phase operations, claiming that nobody can tell where liquid phase operation ends and where vapor phase operation begins.

In this article, liquid phase cracking means that which is done by such processes as the Cross, Dubbs, Jenkins, Holmes-Manley and Tube and Tank.

Until rather recently cracking was regarded as a complete refinery operation in itself. A cracking plant was more or less a standard unit which could be increased in size by the addition of more units. Then, too, the field of usefulness was rather sharply divided among the different processes.

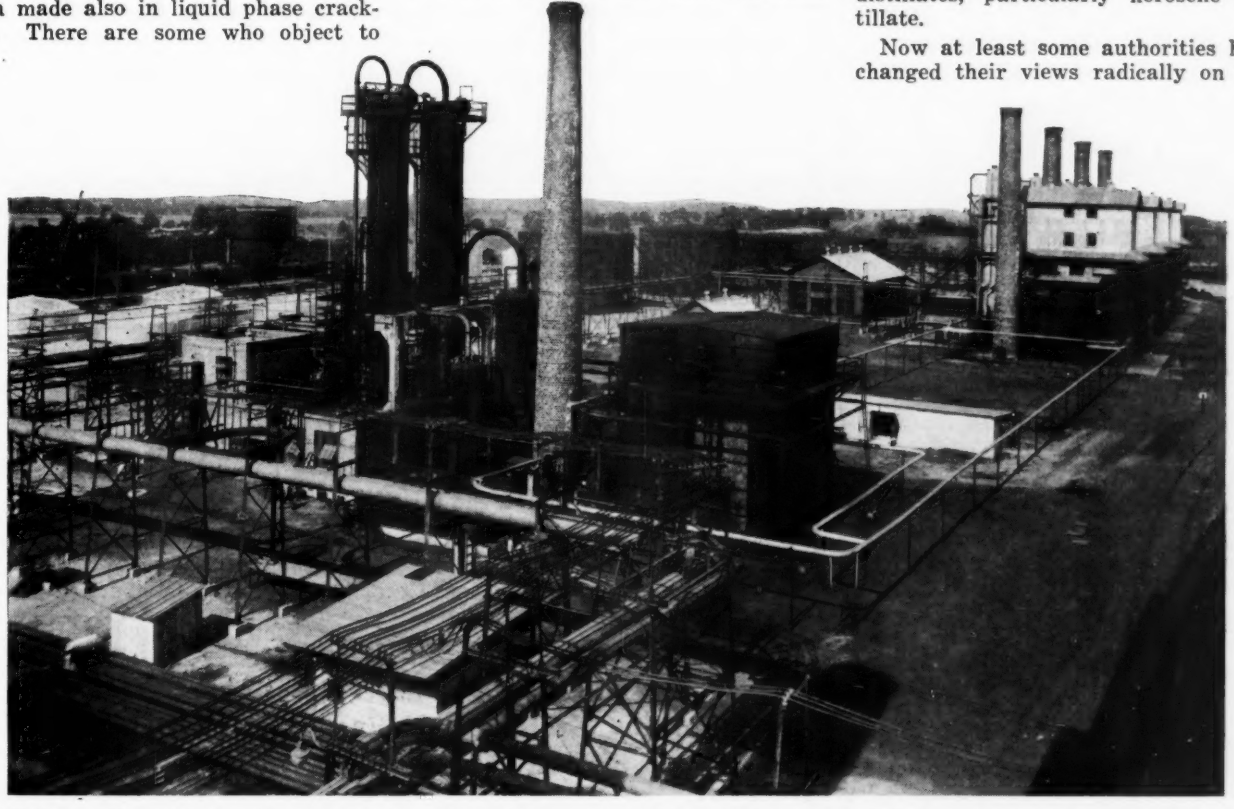
Some were known as adapted to cracking very light oil, such as kerosene distillate and gas oil, others were regarded as chiefly suitable for use on heavier gas oil and still others were put down as processes for the cracking of heavy crude and residual oils.

Some refiners went so far as to install two or even three different cracking processes to handle the different grades of cracking stock made in the refinery. Coke was a curse of all of them, varying in amount according to the oil processed and the method of operations. Length of run was governed by the same factors.

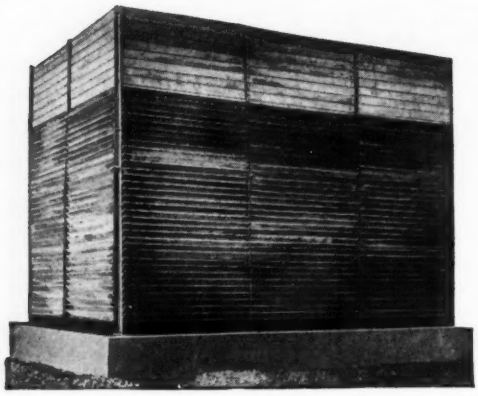
Generally, the straight distilling operations were carried out and the products fractionated, condensed and pumped into storage tanks before the cracking plant began to get in its work. The gas oil, fuel oil, crude or whatever the cracking stock was, was pumped cold into the cracking coils and went through the system.

Now the viewpoint of the refiners and equipment manufacturers' viewpoint on cracking has changed considerable. For one thing, opinions have changed as to the pressures under which cracking units should be operated. It was generally held for a long time that low pressures were all right for cracking heavy residual oil or heavy crudes but that extremely high pressures were necessary for advantageous cracking of the light distillates, particularly kerosene distillate.

Now at least some authorities have changed their views radically on this



Kellogg Viscosity breaker at Lincoln Oil Refining Co. plant, Robinson, Ill. At the right in the background are four Holmes-Manley units



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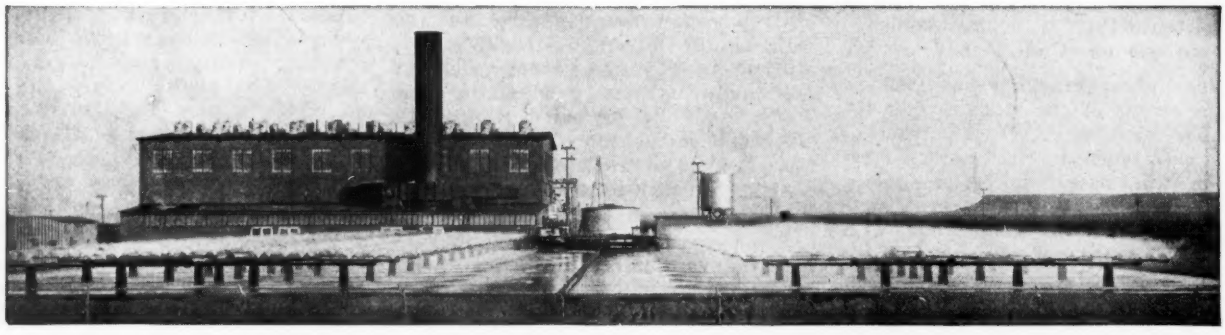

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point. Dr. Gustav Egloff in a recent article states that light distillates can be readily cracked at relatively low pressures (around 200 pounds). On the other hand, the M. W. Kellogg Co. has turned to very high pressures, relatively, in installations of the Cross cracking process for handling heavy charging stocks.

There is a growing tendency now to regard the cracking plant as a part of the whole refinery operation and not as a separate function in itself. With some processes at any rate, there is no longer a "standard unit." Each job is figured as a separate problem and the unit especially designed to fit the needs of the particular plant where it is installed.

The growing need of refiners to increase their efficiency and thereby cut operating costs to the lowest possible figure has stimulated equipment manufacturers to renewed efforts in this direction. Probably the increasing development of vapor phase processes with their impending threat of keen competition has had something to do with the development too.

At any rate, in many of the new installations of cracking equipment, there is a tendency to make the cracking unit do more work than it ever did before. Not only is the equipment in many cases so designed that stocks of various kinds can be handled simply by slight changes in operating methods, but the waste heat from the cracking operation also is used to skim the crude.

The light products are taken off with heat picked up in the towers of the cracking units and the reduced crude is charged right back into the cracking still without losing more than a very little of its heat. Frequently the reflux from the cracking still tower is trapped back into an accumulator tank where it mingles with the reduced crude from the skimming operation, the blended stock being charged into the cracking coils.

These units are flexible enough so that more or fewer light products can be taken off overhead from the crude and more or less of the crude can be thrown into the accumulator tank and cracking stock, according to the state of the market for various products.

Frequently, too, the straight run gasoline and the cracked gasoline are run in together.

Two very important developments have been made recently. One is in reducing materially the production of coke in cracking apparatus and the other is in the character of gasoline.

One installation of two Tube and Tank units is under construction which is expected to run under 1500 pounds of pressure, and at about 900 F. and produce gasoline of better anti-knock quality than the Ethyl gasoline standard, with a gas loss of 4 to 5 per cent and exceedingly little coke.

The M. W. Kellogg Co. has built several units which embody some of the features above mentioned but every unit was different from others in that it was tailor made to fit particular conditions in each case. The Waverly Oil Works Co. plant at Coraopolis, Pa., which was described recently* was one of the first plants built to skim the crude with waste heat from the cracking units.

Now there are several units built or building where all the gasoline and kerosene are taken off by waste heat. The crude is pumped through pancake coils in the fractionating towers and then flashed into a tower at atmospheric pressure. In some cases a "viscosity breaker" is introduced into the system. This is where it is desired to make a fuel oil of Bunker C specifications.

The viscosity breaker is merely a pressure pipe still. Really it is a cracking still without the reaction chamber. In such an operation, the reduced crude from the flash tower is pumped through the viscosity breaker.

Here it is cracked rather lightly, more lightly than if there were a reaction chamber on the end to finish the cracking cycle. The cracking reaction does not proceed far enough in this system to cause the chemical and physical changes that cause a high percentage of sediment in the residue.

From the viscosity breaker the vapor and liquid goes into the same evaporator tower as the vapors from the cracking unit proper and the reaction chamber. Gasoline vapors are taken overhead from this bubble tower, a side stream of gas oil for recycling is drawn off into the mixing tank from whence it goes through the coils of the cracking unit, through the reaction chamber and into the evaporator.

The reflux from the bottom of the bubble tower is a fuel oil of Bunker C specifications.

In these installations, the reaction chambers are set on end instead of horizontally as in earlier Cross practice because of the greater ease of cleaning when the reaction chambers stand vertical.

It is stated that in some of the newer installations, formation of hard coke in the form known to the sorrow of most refiners, is avoided altogether. This is done by a change in the manner of cracking, according to the Kellogg engineers. It is explained that when it is desired to eliminate the formation of coke, the cracking furnace is built with much greater length of tubes than in the older type of cracking pipe still.

By giving a greater length of travel to the oil, all the cracking is done in the pipe still. Then the oil and vapor are flashed into the reaction chamber, which is vertical, and the pressure much reduced. All the oil flashes instantly when it hits the reaction chamber. A heavy tar drops to the bottom of the tower which is continually drawn off before it forms coke.

Variations of which modern cracking systems are capable are almost unlimited and they give the opportunity to adapt them to the crude to be handled, the kind of stock it is desired to crack, the anti-knock value it is desired to get into the gasoline and the kind of fuel oil that is marketable in the territory reached by that particular refinery.

*National Petroleum News, March 13, 1929, Pg. 69.

New Patents

Prepared by R. E Burnham, patent and trademark attorney, Continental Trust Building, Washington, D. C., from whom copies may be obtained at the rate of 20c each. State number of patent and name of inventor when ordering. April 2, 1929.

REFINING

Process for the conversion of petroleum oils—Gustav Egloff, Chicago, Ill., assignor to Universal Oil Products Co., same place. Filed Aug. 16, 1922. No. 1,707,348.

Process and apparatus for converting hydrocarbon oil—Gustav Egloff, Chicago, Ill., assignor to Universal Oil Products Co., same place. Filed June 25, 1923. No. 1,707,349.

Fractional distillation—John Primrose, Richmond Hill, N. Y., assignor to Foster Wheeler Corporation, New York, N. Y. Filed Jan. 30, 1924. No. 1,707,369.

Process of distilling mineral oil—Arthur E. Pew, Jr., Bryn Mawr, Pa., assignor to Sun Oil Co., Philadelphia, Pa. Filed Dec. 22, 1926. No. 1,707,448.

Method of and means for treating fluid hydrocarbons—Frank B. Fretter, Cleveland, Ohio, assignor to National Refining Co., same place. Filed June 18, 1925. No. 1,707,606.

Process of refining used oils—Robert V. Aycock and William D. Harris, Kansas City, Mo., assignors to Refinoil Mfg. Corporation, same place. Filed July 27, 1928. No. 1,707,671.

Contact and filter apparatus—William D. Harris and Robert V. Aycock, Kansas City, Mo., assignors to Refinoil Mfg. Corporation, same place. Filed Feb. 13, 1928. No. 1,707,672.

PRODUCTION

Sand-reel—William A. Cook, Marion, Ind., assignor to Marion Machine, Foundry & Supply Co., same place. Filed Dec. 27, 1927. No. 1,707,219.

Well-drilling rig—Ralph H. Ramsey, Ardmore, Okla. Filed Sept. 8, 1920. No. 1,707,568.

Pump-jack—Luke S. Stripling, Burkburnett, Tex. Filed Jan. 3, 1927. No. 1,707,583.

Pump-barrel—Rees H. Lemmon, Los Angeles, Cal. Filed March 22, 1926. No. 1,707,667.

MISCELLANEOUS

Art of dispensing grease—Theodore E. Baker, Los Angeles, Cal., assignor to Alemite Mfg. Corporation, Chicago, Ill. Filed March 21, 1927. No. 1,707,425.

Liquid-dispenser—Minor W. Felver and Raymond A. Johnson, Delano, Cal. Filed Dec. 14, 1926. No. 1,707,462.

Process for the manufacture of oil-soluble sulphonates—Hyym E. Buc, Roselle, N. J., assignor to Standard Oil Development Co. Filed Sept. 26, 1927. No. 1,707,506.

Soaking-drum apparatus—Henry H. Hewetson, Newton Center, Mass., assignor to Beacon Oil, Co., Everett, Mass. Filed March 16, 1927. No. 1,707,520.

Liquid-meter device for tank-trucks—James R. Douglas, San Francisco, Cal., assignor to Standard Oil Co. of California. Filed Dec. 7, 1925. No. 1,707,657.

ON THE LAZY BENCH

National Petroleum News

Don't laugh at a spinster for looking under the bed—it's her hope chest.

—The Oil Can

* * *

Bill: "Say, Jack, how did you get that red on your lips?"

Jack: "That's my tag for parking too long in one place."

—The Loreco Diamond

* * *

I've kept that schoolgirl complexion.
I've walked a mile for a smoke.
I've asked the man who owns one.
And he tells me it keeps him broke.
I know that a child can play it.
To guard the danger line I try.
I know when it's time to retire.
And I've heard that they satisfy.
But there's one thing that baffles me.
Even for a lifetime I strive,
I'd like to know just whether or not
I'm one of the four out of five!

—Our Sun

* * *

"Girls were harder to kiss in your days, weren't they, grandpa?"

"Well, mebbe; but it wasn't so blame dangerous. The ol' parlor sofa wasn't apt to smash into a tree jest about the time ye got all puckered up."

—The Oil Can

* * *

"Ah, a rose between two thorns," said the village cut-up when Mrs. Gabble had seated herself between Crabb and Crotchett.

"I should call it a tongue sandwich," replied Deacon Sparks.

—W O W

* * *

"But how will I know when I come to the cross roads?"

"You can't miss the place. It has only five filling stations."

—The Loreco Diamond

* * *

Oswald: "You look like a sensible girl. Let's get married."

Here It Is, Mr. Myers

Dear Editor:

For awhile, you ran, or attempted to run, a "phunny" column known as "The Lazy Bench." Here of late one gets the idea that the bird responsible for this feature stretched out on the bench and went to sleep.

We are all more or less afflicted with that thing known as "ennui"; but it does send a person's blood pressure above normal to find a Favorite Section kicked out the rear door.

If the individual responsible for assembling material for "The Lazy Bench" is too lazy to get the Joe Taylor material into shape, we would suggest that he go on a diet of Pink Pills for Pale People. These have been known to rejuvenate the weak and faltering. Iron is also good for run down systems. Not much iron, say about the same quantity found in an ordinary crow-bar ought to fix up a drooping spirit.

Anyway, see if you can rouse the sleeping beauty and start "The Lazy Bench" to working again.—Ralph L. Myers.

NO, I DON'T THINK YOUR WIFE IS TOO PLUMP— IN FACT I BELIEVE SHE COULD CARRY A FEW MORE POUNDS VERY NICELY!
DOCTOR LEGISLATOR
GASOLINE TAX
MOTORIST
CORSE '29

Illie: "Nothing doing. I'm as sensible as I look."

—The Oil Can

* * *

"Is she very pretty?"

"Pretty? Say, when she gets on a street car the advertising is a total loss."

—Doherty News

* * *

Adam and Eve had an awful time
Truly I am no liar;
They couldn't have owned a car at all
Because they lacked attire.

—Pure Oil News

* * *

They laughed when I sat down at the piano. Some darn fool had removed the stool.

—Field Flashes

* * *

Empty-Handed

Judge: "Have you anything to offer the court before sentence is passed on you?"

Prisoner: "No, judge. I had ten dollars, but my lawyer took that."

—Independent Topics

* * *

Mother: "John, it's positively shameful the way Junior talks. I just heard him say: 'I ain't never went nowhere.'"

Father: "Shameful? Why, he has traveled twice as much as most boys his age!"

—Skelly News

* * *

This is the time of year, when everybody should begin to think about Texas—income Texas.

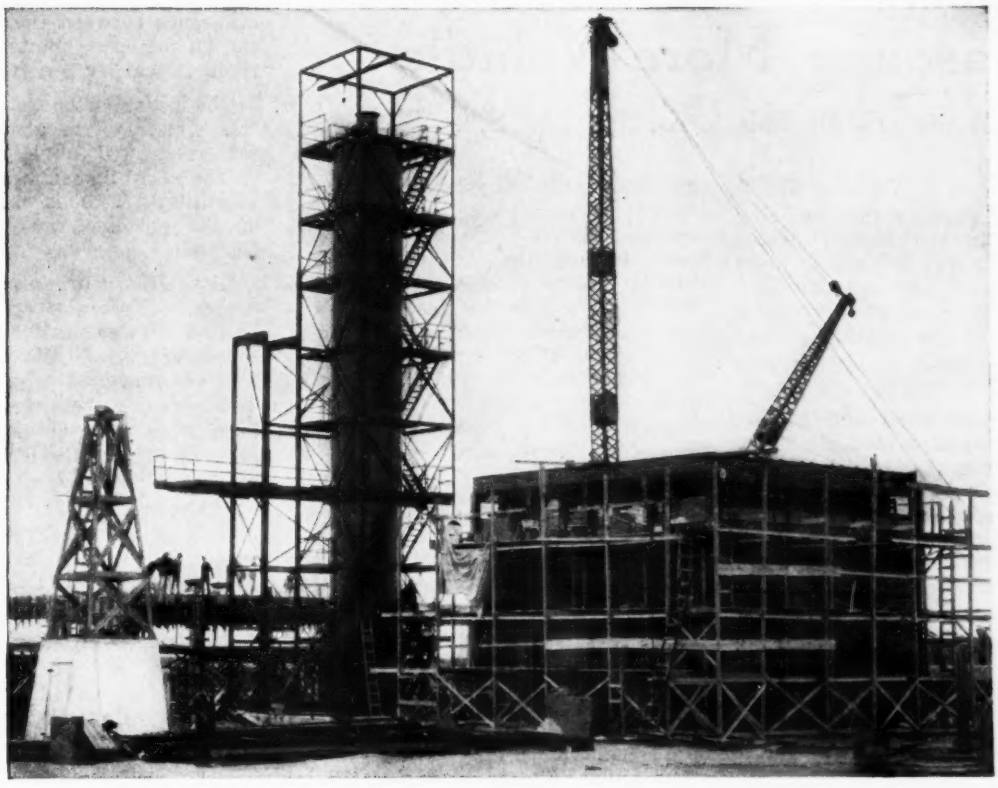
—Union Oil Bulletin

* * *

"No girl ever made a fool out of me."

"Who was it then?"

—Union Oil Bulletin



A 5,000 Barrel Distilling Unit

The erection of a Foster Wheeler distillation unit for the removal of gasoline, gas oil and fuel oil, is here shown under construction.

A standard Foster tube still (at the right) heats 5,000 barrels of crude per day to a final temperature sufficient to vaporize 80-90 per cent of the crude. This charge is delivered to the tower, which is arranged for a top stream of gasoline, a side stream of gas oil and fuel oil bottoms. Provision is made in the construction of the tower for additional side streams in case lubricating stocks are desired.

This distilling unit includes Foster vapor heat exchangers, vapor condenser, fuel oil heat exchanger, also a small boiler plant for heating and stand-by for steam pumps in case of electrical failure.

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FOSTER WHEELER

Bureau of Mines Finds U. S. Gasoline More Volatile

By E. C. Lane, D. B. Taliaferro, Jr., and S. S. Taylor*

WASHINGTON

THE motor gasoline that is being marketed in the United States this winter (1928-29) is slightly more volatile than that sold a year ago. This characteristic is shown by a slight lowering of the distillation temperatures, particularly at the average initial and 20 per cent boiling points.

During the past nine and a half years the Bureau of Mines has made semiannual surveys of the gasoline marketed in the United States; the survey just completed is the nineteenth in the series. The 12 cities in which samples have been collected were chosen as representative of the more important marketing territories as it was obviously impracticable to obtain a sample of every gasoline sold in the entire country.

The results of the 19 surveys are summarized in Tables 1 and 2; the "winter" surveys are given in Table 1 and the "summer" surveys in Table 2. Table 3 shows the average results of the survey for each individual district.

In the past a distinct difference usually existed between "winter" and "summer" gasoline, as the gasoline marketed during the winter was more volatile than that sold during the summer. For several years this difference has been very small and has been confined to the lower end of the distillation range. This winter, as was the case a year ago, the average figures indicate a general trend toward the sale of a more volatile winter-grade gasoline; this trend is especially evident in the samples collected in Boston, New York, Washington, Pittsburgh, Omaha, and San Francisco. A study of the individual analyses, however, shows a common tendency toward the marketing of a standardized product, as individual variations from the average, with the exception of a few blends, are small.

Tables 1 and 2 indicate that the tendency toward better fractionation in the manufacture of gasoline which was noted in the previous surveys has been maintained, as the average difference between the end points and the 90 per cent points is notably less than in earlier surveys.

The gasoline marketed in each city this winter, is in general, much like that marketed a year ago in that it shows a tendency toward greater volatility. This is particularly true of the gasoline samples collected in Laramie.

Distillation curves representing the present Federal specification for United States motor gasoline and the average of all samples in the present survey are given in Fig. 1. The samples were tested in accordance with methods described in Bureau of Mines Technical Paper 323B, the barometric pressure in millimeters of mercury at the time of distillation is given as a matter of record, except in the samples from Laramie, Wyo., and Denver, Colo.

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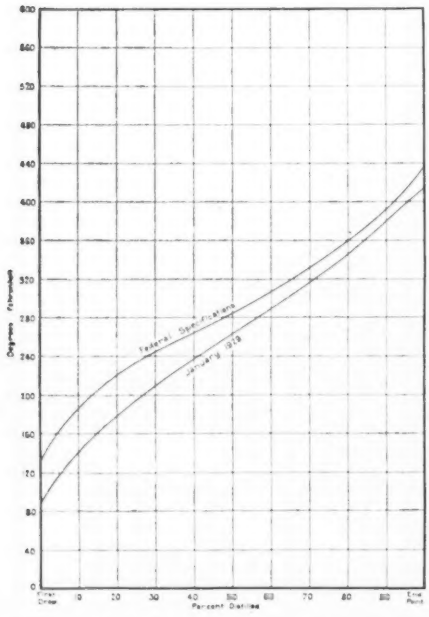


Fig. 1—Distillation curve of average gasoline

Table 1—Average Results of Motor Gasoline Surveys

Winter

Survey	Specific gravity	Degrees A.P.I.	First drop	20%	50%	90%	End point	Average b.p.	Per-centage recovered
Jan., 1920	0.748	57.7	119	200	259	369	427	264	96.6
Jan., 1921	.744	58.7	113	197	261	377	431	264	95.9
Jan., 1922	.745	58.4	102	200	267	377	430	268	96.0
Jan., 1923	.744	58.8	107	201	267	375	427	268	96.0
Jan., 1924	.748	57.7	96	196	267	383	431	268	96.2
Jan., 1925	.746	58.2	95	195	266	382	425	267	96.2
Jan., 1926	.747	57.9	93	189	264	380	423	264	96.3
Jan., 1927	.748	57.7	92	185	264	383	421	264	96.5
Jan., 1928	.747	57.9	90	181	261	378	416	260	96.5
Jan., 1929	.746	58.2	87	179	263	380	414	260	96.1
Average	.746	58.2	99	192	264	378	425	265	96.2

Table 2—Average Results of Motor Gasoline Surveys

Summer

Survey	Specific gravity	Degrees A.P.I.	First drop	20%	50%	90%	End point	Average b.p.	Per-centage recovered
July, 1920	0.749	57.4	130	208	268	388	446	277	96.7
July, 1921	.747	57.9	125	202	262	377	433	270	96.7
July, 1922	.752	56.8	121	208	270	375	429	273	96.8
July, 1923	.751	56.9	125	206	269	382	436	273	96.8
July, 1924	.751	56.9	107	200	271	390	431	273	96.0
July, 1925	.754	56.2	108	204	275	387	427	275	96.2
July, 1926	.750	57.2	100	194	266	382	421	267	96.7
July, 1927	.748	57.7	102	193	267	381	417	267	96.4
July, 1928	.748	57.7	100	190	265	380	413	265	96.1
Average	.750	57.2	113	201	268	382	428	271	96.5

Table 3—Average Results of Motor Gasoline Survey, Jan. 1929

District	Specific gravity	Degrees A.P.I.	First drop	20%	50%	90%	End point	Average b.p.	Per-centage recovered
Boston	0.747	57.9	88	183	266	369	408	260	96.9
New York	.742	59.2	86	181	265	376	410	259	96.0
Washington	.753	56.4	93	185	258	372	410	259	96.8
Pittsburgh	.751	56.9	90	184	256	378	412	259	96.2
Chicago	.740	59.7	86	175	262	384	413	259	95.3
New Orleans	.749	57.4	88	182	275	381	415	266	96.6
St. Louis	.741	59.5	85	177	268	390	418	264	95.7
Bartlesville	.738	60.2	87	175	267	392	421	264	96.0
Omaha	.739	60.0	84	175	264	385	418	261	96.0
Denver	.742	59.2	80	174	259	371	404	254	96.3
Laramie	.739	60.0	77	161	247	359	399	243	96.9
San. Fran.	.751	56.9	89	185	264	384	420	263	96.0
Average	.746	58.2	87	179	263	380	414	260	96.1

A complete copy of Serial No. 2916, containing detailed tables of the analyses, can be obtained on request from the U. S. Bureau of Mines, Washington, D. C.

Oil Company Tourist Camp Is Good Advertisement and Profitable

By Roger B. Stafford
N. P. N. STAFF WRITER

BRADFORD, Pa. TOURIST camps that are good advertising features, but which also return a tangible profit on money invested in them, are owned by the Kendall Refining Co. of Bradford, at two places on U. S. Route 20, which is also known as the Chicago-Cleveland-Buffalo highway. One camp is a mile and a quarter west of Silver Creek, N. Y., and the other is a half mile east of Westfield, N. Y. The two camps are 26 miles apart and are operated by lessees.

The Silver Creek camp consists of 49 cottages, 48 of which are named after the states of the Union and the forty-ninth is called the White House. The 12 cottages at the Westfield camp are named for leading cities of the country.

The camps are the outgrowth of the love of Otto Koch, president and general manager of the Kendall company, for outdoor life. Mr. Koch likes to live close to nature and his belief that many other people have the same likes and would patronize a good, clean camp when touring by motor car, led him three years ago to build six 12 x 14 foot cottages on the tract his company purchased near Silver Creek.

The venture was a success and in May, 1927, eight more cottages were built. Seventeen more were added to the little village in July and six more in September, 1927. The remaining 12 were built last year depleting the roster of state names.

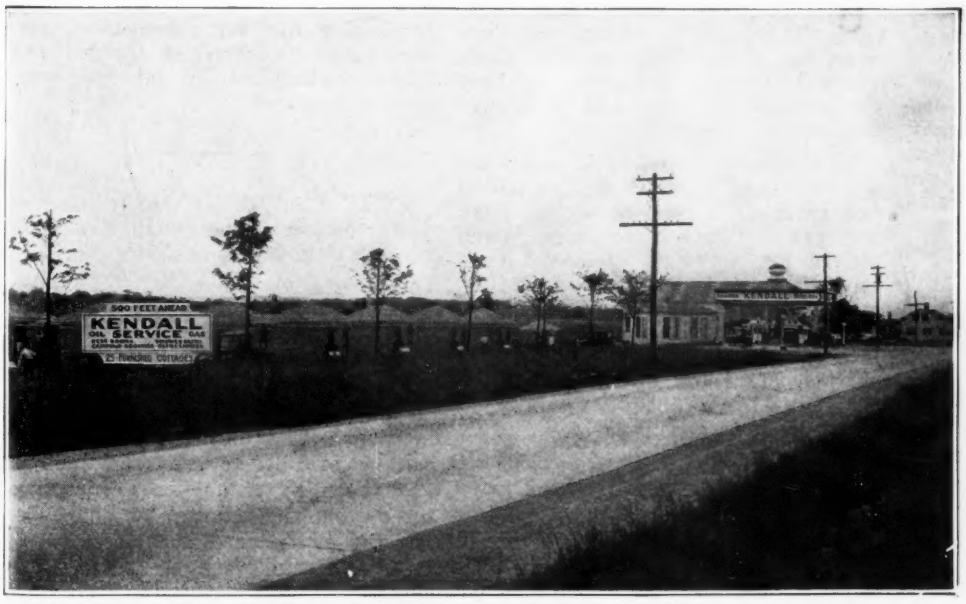
A filling station where gasoline, oil, greases, groceries, and fruits and vegetables in season are sold, an oiling and greasing house, outdoor lift, kitchen for tourists, and dining car, complete the major equipment of the camp.

The entire camp is leased to Ernest Kramer who also leases a drive-in service station from the Kendall company at Fredonia, N. Y., eight miles away. The camp and filling station are operated by Ray Damon, an employe of Kramer. Damon with his family lives in a house owned by the Kendall company across the road from the camp so that he is nearby 24 hours a day to see that everything is running smoothly. The dining car is sublet to another man who gives it his full attention.

Filling station and dining car at Kendall Refining Co.'s tourist camp near Silver Creek, N. Y. Note the concrete drives

The filling station and oiling and greasing house are let at a flat rental but in the cottage rental end the Kendall company shares on a percentage basis in the net profits.

Each cottage has a door and window at the front and a window at the rear. Each has electric light and a two-burner hot plate. Some cottages have one double metal bed and some have two double beds. The former rent for $2 a night



General view of Kendall Refining Co.'s tourist camp near Silver Creek, N. Y. When the picture was taken there were 25 cottages. Today there are 49 cottages at this camp

and the latter for $3 a night.

Gas for cooking is included in the rental if the patrons wish to cook in the cottages instead of the kitchen, or to eat in the dining car. There is a folding table in each cottage and chairs. The windows and doors are screened. In the camp kitchen are a few utensiles but no dishes.

The floors are varnished but there are a few scatter rugs in each cottage. The walls of most cottages are not finished but those in the row nearest the highway are finished with plaster board so the cottages are warm enough for winter use. The cottages which are open all year, may be heated with gas.

All bedding, towels and washcloths were supplied originally by the Kendall company but replacements come from operating expense and are bought by the lessee. The losses and damage to supplies have been very low so far, said J. B. Fisher of the Kendall company. Each bed has a good mattress, sheets, pillows, blanket and throwover.

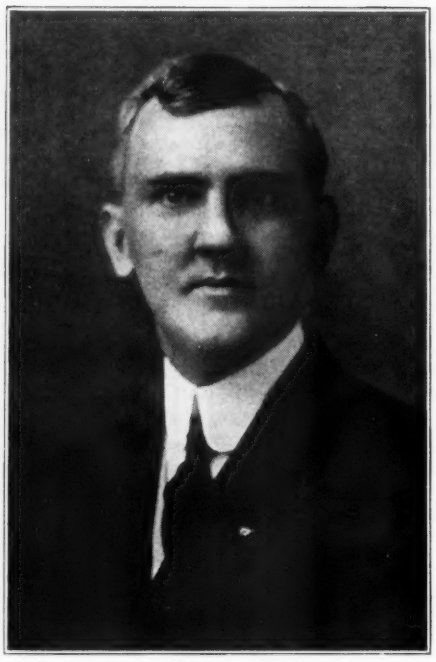
The camp is operated largely like a hotel. Patrons are required to register but they must make a cash deposit on the key to the cottage rented them. This feature has served to keep out undesirables and few parties have ever left the camp before morning. When the attendant is suspicious of applicants for quarters he may tell them that all cottages are rented or reserved for the night.

The trade, said Mr. Fisher, has been high class. Many of the patrons have been to the camp two or more times. Many middle western tourists that have spent a night there on their way to Niagara Falls, have arranged to spend a night there on their return. Often reservations for space are made days in advance of the coming of a tourist party.

THE camp also is only a short distance from Lake Erie and many week end parties are arranged at inland places for a week end at the lake. Cottages are rented and bathing suits may be donned in the cottages before the party goes to the lake. Showers are provided for both men and women in the filling station building so all conveniences of a good bathhouse may be enjoyed.

There are three showers and four washstands for men and two showers and four washstands for women. There is both hot and cold water. There also are four toilets for men and three for women. The part of the station set aside for women contains a rest room.

The baths are a feature that attract a great many tourists and the fact that a warm shower bath can be had at the Kendall camps, is advertised on bill boards for miles each side of both camps.



George B. Power

Secretary of the Mississippi Oil Men's Association, Jackson, Miss.

To the west of the Silver Creek camp road signs extend 23 miles, at which distance there is a 12 x 25 foot board. A board of like size has been placed 17 miles away. Small boards are placed at mile intervals for seven miles from the station. East of the camp is a large board, electrically lighted. On it is given the mileage to the camp and the facilities and conveniences that may be had there. Postcards showing views of the camp are given tourists free of charge.

Among the conveniences are fresh clean bedding and linens daily. Laundering is done by a woman who lives near the camp. Women also from the neighborhood are hired to keep the cottages in order and to change the linens.

In summer the station is kept open all night and a great deal of oiling and greasing is done at night. High pressure lubrication service is given at the pit, which is enclosed, or at the lift which is outdoors. Motor oil sales run high, Mr. Fisher said, averaging around 4 gallons to 100 gallons of gasoline sold. (The general average of motor oil sales for the country is only about 3 gallons to 100 gallons of gasoline.)

In August, the busiest month, the cottages are usually all rented by 8 p.m., but in other summer months, it may be possible to get quarters as late as midnight or 1 a.m. Patronage falls off after Labor Day but enough motorists drop in all through the winter to warrant keeping open a few cottages all year.

The cottages cost $425 to $450 each, exclusive of furnishings. They are of wood which is cut and painted to look like buff brick and from the highway the observer would be willing to wager they are brick. The roofs are of vari-colored composition shingles. There is a concrete walk in front of each row of cottages which are spaced far enough apart to permit the tourist to park his automobile beside the cottage he has rented.

A TOURIST camp, according to the Kendall company, must be on a heavily traveled road if it is to be profitable as an investment, and to permit a high standard of service. Good service to be profitable must have patronage and patronage cannot be had off a well traveled road unless there are other attractions to draw tourists. And the other attractions that would make a camp profitable probably would be so attractive that a regular resort hotel would be warranted.

The Kendall Silver Creek camp was begun only after numerous other camps in the eastern part of the United States were visited. Officers of the company proudly assert that theirs is the finest in its equipment, and operation in the northeastern quarter of the United States. The high standard of the Silver Creek camp is maintained at the Westfield camp as well.

The camps in three summers of operation have always returned a profit on the money invested in them, but the Kendall company regard them as having far greater indirect significance that as a direct money earning proposition. Their indirect value is that of getting tourists to talk about Kendall when they return to their home communities because Kendall is now a national marketer of lubricating oils for automobiles, motor boats, tractors, airplanes and other applications of internal combustion engines.

FORT WAYNE, Ind., April 18.—A new model gasoline pump has been added by S. F. Bowser & Co., Inc., to its line of Xacto Sentry pumps. The new pump is electrically operated and has all the equipment, including pump, motor, filter meter, strainer, air release, etc., built into the pedestal and completely enclosed by the housings. The unit is complete and can be installed where other pumps have been by fitting and connecting the suction and return lines and making the electrical connections.

The new pump has the features of accuracy, speedy discharge, large easy-to-read dials, nozzle control of flow and sight bowl.

FOR ALL

Your Oil Handling Equipment

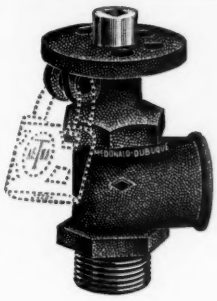


Plate 885—Anti-Freeze Drain Valve

Plate 818—Foot Valve

Plate 848—Self-Closing Throttle Valve

Plate 834—Duplex Oil Tank Vent. Patented

Every product in McDonald's complete line of oil handling equipment has practical advantages you want for the safe, economical handling of gasoline and oil—guaranteed by over 70 years of manufacturing skill and stamped with THE NAME OF QUALITY —McDONALD

"The Home of the Swing Joint"

A. Y. McDONALD MFG. CO.
Dubuque, Iowa

Omaha Minneapolis Des Moines Kansas City Sioux City Lincoln Denver

"There's a McDonald Distributor Near You"

Plate 828—Truck Tank Unloading Nozzle

Plate 846—Lock Gate Valve—Patented 8-10-1920

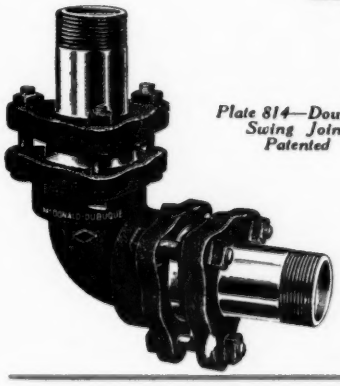


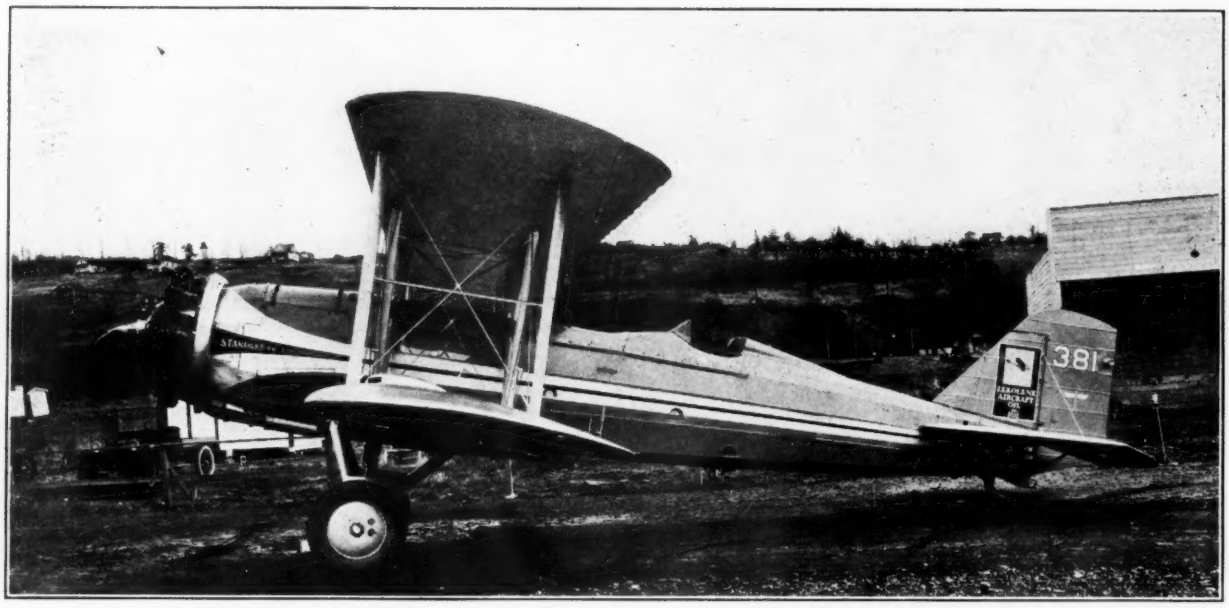
Plate 814—Double Swing Joint Patented

New Hose Nozzle—Listed as Standard by Underwriters Laboratories. Plate 817-FF

Plate 842—Self-Closing Tank Wagon Faucet

EST. 1856 McDonald

McDONALD



An air mail-passenger type of Boeing ship belonging to the Standard Oil Co. of California

Along the Air Lanes

DETROIT

OUR industry was well represented at the All-American Aircraft Show held at Convention hall here April 5 to 13. Anticipating the tremendous demand for petroleum products which airplanes are expected to create, six refining companies had exhibits featuring special airplane gasolines and motor oils.

They were the Texas Pacific Coal & Oil Co., The Texas Co., the Vacuum Oil Co., the Sinclair Refining Co., the Kendall Refining Co. and the Standard Oil Co. of Indiana.

That the modern airplane is taking its place as an accepted mode of transportation with safety and comfort of passengers as prime considerations was evident at the show. The colorful and thrilling flying of early pilots has gone.

Indications are that the industry will develop along the lines of the automobile industry. Sales talks now are being made on solid facts which have been found to influence automobile buyers.

Operation costs of airplanes figured on a mileage basis are readily available. Some manufacturers of open cockpit, 2-place jobs say their machines can be operated for 6 cents a mile, including depreciation, interest on investment, repair costs, and gasoline and oil. Costs of operation of cabin machines carrying 4 or 5 passengers are relatively higher.

Several of the lighter machines exhibited at the show have engines of the air cooled type which will average 20 miles to the gallon of gasoline and 200 per pint of oil. These same engines will operate for 200 flying hours before a "top overhaul" (valve grinding, carbon cleaning, ignition check) is necessary. Manufacturers of this type of machine have a strong argument for speed and economy, for these lighter machines cruise at about 80 to 90 miles per hour.

In all machines exhibited, comfort and safety of the passenger has been carefully considered. Cockpits in the open machines have been well upholstered, and shielded from the air stream of the propeller. In the cabin ships, upholstery is of typical sedan type, with well padded chairs, covered with the latest patterns of upholstery fabrics. In some of the large three-engined, 12 and 14 passenger machines designed for regular airline service, toilet facilities are provided, and miniature kitchenettes are built in so that light lunches can be served to passengers en route.

In technical design, it is apparent that the engineers of the industry are making every attempt to build fool proof machines. Some designers have secured such stability in their machines that they will virtually fly themselves on a straight and level course. The deadly stall, with the resultant tail spin is entirely eliminated in some designs. One manufacturer has a standing offer of $500 to any pilot who can make his ship spin four full turns.

The advent of the Handley-Page Slotted Wing, an English invention, which it is claimed absolutely prevents the stall, will undoubtedly do much toward making the airplane safe and dependable. This device can easily be attached to any ship, according to its makers, but the patent situation will likely retard its early adoption by many American makers.

* * *

The first airplane to be shipped uncrated and carried as excess baggage on the deck of a steamer across the Atlantic was the Standard Oil Co. of New Jersey "Wasp" Lockheed-Vega. It was hoisted aboard and lashed to the after-deck of the S. S. Paris on the French liner's latest voyage from New York.

Capt. E. E. Aldrin, head of the company's aviation activities, sailed the week before on the Ile de France to fly over all Europe this spring on a two months' tour in the interests of his company.

Capt. Aldrin's flight will include Great Britain, the Netherlands, Belgium, Germany and the Scandinavian countries; and Poland, Czechoslovakia, Austria, Jugo-Slavia, Italy, Switzerland and France.

Over 25,000 miles have been covered by this plane in this country during seven months that it has been in use. It has been used chiefly as a sort of flying laboratory for checking aviation fuels and lubricants.

In line with its policy of promoting aviation, the company is marking all its warehouse roofs with the name of the town and the direction of the nearest airport.

How the Public Can Learn About Oil From the Institute

IN ITS campaign to acquaint the public and men in all phases of the oil industry more fully with the facts regarding that industry, the Division of Public Relations of the American Petroleum Institute has just issued material to be used by oil companies in their contacts with employes and dealers.

Part of this material, entitled "Employer and Employee," is for use of editors of employe publications, and for the use of industrial and personnel officials.

That entitled "The Dealer Public" is for use in dealer publications, house organs and so on, going to dealers and for the general use of sales and advertising managers.

According to Leonard M. Fanning, director of the Division of Public Relations, it is planned to issue this material once a month. Those interested in receiving it should write to Mr. Fanning at the Institute offices, 250 Park Ave., New York.

Below are samples of the first issue of both classes of this material.

To the dealer public:

There are more states that have a significant share in the petroleum industry than there are cotton states or wheat states, corn, steel, or textile states. Of all the mineral industries, the production of petroleum shows the greatest gains.

* * *

The oil refining industry ranks fourth in the value of products manufactured in 1925, the latest census year. The railroads of the United States transport a larger tonnage of petroleum products than of any other manufactured commodity.

* * *

The petroleum industry is one of the largest purchasers of steel. It is one of the largest users of passenger and commercial motor vehicles.

* * *

Petroleum ranks first in exports of manufacture from the United States. In 1927 it supplied $486,000,000 toward a favorable trade balance.

* * *

The petroleum industry gives work to 1,000,000 persons and indirectly to another million or two.

* * *

Tankers owned and operated by the oil industry comprise 17 per cent of the country's merchant tonnage. The industry operates its own tank cars, nearly 150,000 of them. It has its own transportation system comprising 90,000 miles of pipe line, and capable of transporting crude oil all the way from Texas to New York.

* * *

There are some 1,500,000 stock and bond holders, royalty owners, etc., who, with their families derive their entire income, or part of it, from petroleum enterprise. It may be said that the oil industry today is publicly owned. Where some 15 years ago the largest oil companies had only a comparatively few stockholders, today their books record stockholders numbering in the tens of thousands.

* * *

With 6 per cent of the world's area, the United States produces 70 per cent of the world's oil, 60 per cent of the wheat and cotton, 50 per cent of the copper and pig iron, and 40 per cent of the lead and coal.

* * *

We have more motor vehicles than telephones—23,000,000 cars against 18,750,000 'phones, and every time a telephone bell rings, some motor car travels six miles.

* * *

A revenue of $300,000,000, mostly for the nation's roads, was derived from the gasoline tax in 1928, it is estimated. The tax in 1927 brought $259,000,000; in 1926, $188,000,000; and in 1925, $146,000,000.

* * *

Questions such as these, are asked and answered:

Q. Where does gasoline come from? A. Gasoline is derived from crude oil and from natural gas through highly developed refining processes.

Q. Is gasoline dangerous? A. Gasoline is hazardous to handle unless proper precautions are taken, such as keeping it from exposed flame, avoiding generation of static electricity by pouring through chamois and failing to have the containers "grounded," that is, touching.

Q. What is carbon monoxide gas? A. A deadly and subtle gas formed when gasoline vapor is burned in an engine; it overcomes without warning. May be avoided by keeping doors open when starting the motor inside the garage.

* * *

For employer and employe:

With the one exception of the art of printing, it may well be doubted if any single industry has brought so many and sweeping changes to the world as has the modern production and use of petroleum.

FARM PUMPS

All Is Furnished as shown in cut

BUILT RIGHT—
PRICED RIGHT

Saving of $7.00 to $11.00 on installation cost.

Most practical and economical Farm Pump on the market. Now is the time to get the farm business — and this is the pump to get it with. Write us today!

MARS CO.
Aurora, Ill.

Peace-maker

Light Weight Folio

No. 369—A compact outfit. Folio made from heavy 5-oz. smooth black cowhide, with 5½-inch over-all expansion and three inner pockets. Inner case contains six 4-oz. bottles, displayed on a background of red velvet. Each bottle is partitioned separately. Case also contains five grease jars.

Less 10% for Cash

Other styles in our FREE Catalog

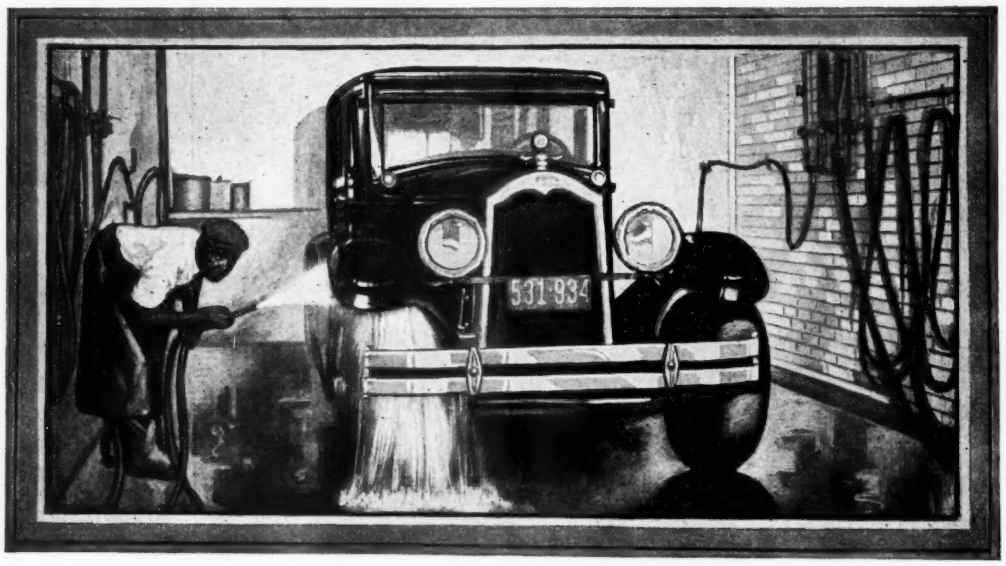
L-U-C-E

Builders of Sales Luggage

614 Delaware, KANSAS CITY, MO.

Compressed air equipment increases profits because ~

Faster work means lower costs



Quick car washing !

Houston dealer's wash rack just paid expenses, now with Curtis Car Washer makes a big daily profit

A LARGE car dealer in Houston [name on request] says: "Our wash rack required the revenue from 10 jobs daily to take care of actual overhead, which was the full capacity of the rack when washing was done by hand.

* * *

"A Curtis Car Washer enabled us to increase production to the point where it pays a *big daily profit.* This has led us to install two additional Curtis Car Washers."

* * *

Car washing by hand is actually done at a loss today, while a Curtis Car Washer makes this end of the business *highly profitable.*

The great saving in labor cost per car is one reason. Another is that people *do not like to wait* and are less and less willing to patronize a station where slow, old-fashioned methods are followed.

* * *

The Curtis "75th Anniversary" line of car washers incorporate *many important new features:* The Compressed Air Washer has new duplex Timken Roller Bearing Compressor; the Hydraulic Washer has fully enclosed, self-oiling, slow-speed pump specially designed for this service.

* * *

Send for survey of actual costs and profits, and catalog of these *new* washers.

Write for new Catalog C-75

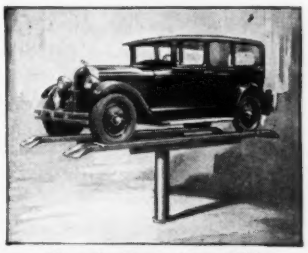
CURTIS

This company was founded in 1854; is, therefore, in its *seventy-fifth* year. Three quarters of a century of successful business existence can be explained only by [1] integrity, [2] sound policy, and [3] financial strength to permit the extensive development and research work necessary to keep our product in advance of competition.

CURTIS — The TIMKEN Bearing Compressor Line

1854 CURTIS 1929
75th Anniversary Line

Curtis Rotating Lift increases your profits because it [1] attracts customers, [2] cuts time-cost. Inspecting, lubricating and repairing done in half the time. Lets the customer see the work. This is the *safe* lift for you and for the car. Lift always held in position by positive oil lock. Flush stuffing box design; no pits or recesses. Roll-on or free wheel type.

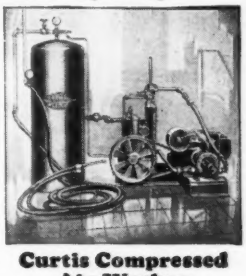


Curtis Rotating Lift

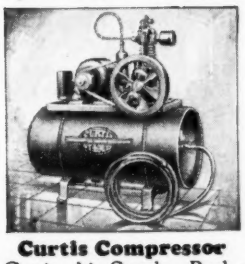
Curtis Hydraulic Car Washer

Curtis Hydraulic Car Washer—A low-priced self-contained outfit. One and two gun sizes. New slow speed pump, fully enclosed and self-oiling, specially designed by Curtis for car-wash service. Flooded and direct self-oiling systems. Special alloy-steel rust-resisting double-heat-treated nozzle discs. Automatic pressure governor. This car washer is the result of 75 years manufacturing experience, of which 32 years have been devoted to pneumatic engineering.

Curtis Compressed Air Washer not only washes more cars cleaner than any other power washer, but renders a *complete* cleaning service. Operates cleaning attachments and pneumatic tools, furnishes air for tire inflation, etc. New features: Timken equipped Curtis duplex compressor; more compact mounting; reduced weight. Curtis is the only manufacturer building both types of washer, therefore in a position to advise without prejudice.

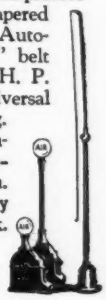


Curtis Compressed Air Washer



Curtis Compressor

Curtis Compressor has Timken tapered roller bearings. Automobile type "V" belt drive [up to 2 H. P. inclusive]. Universal motor mounting. All-steel base. Improved "Centro-Ring oiling system. Painted attractively in red and black.



Curtis Air Stands—Reel and Tower types with or without water attachments.

St. Louis

Curtis Pneumatic Mchy. Co.,
1965 Kienlen Av., St. Louis—518-X Hudson Term., N. Y
Please send information about .....
.....
Name.....
Address.....

A3

Changes in Oiling, Greasing and Fueling Systems of New Models

HERE is a means by which even minor changes in lubrication and fuel systems of new models of automobiles may be quickly made known to the men in your lubrication stations.

John Younger, head of the industrial engineering department of Ohio State University, and editor of Automotive Abstracts, will tell NATIONAL PETROLEUM NEWS *readers what the changes are in both engine and chassis lubrication, and in fuel systems, in new models, as they are brought out.*

His articles appear irregularly closely following the announcement of new models by the automobile companies.

Oldsmobile Viking V-Eight

Some facts about the lubrication and motor system of the new Oldsmobile Viking V-Eight chassis.

At the head of the valve rocker arm shaft is the gearing. Placing the distributor and oil pump at the rear has made possible good valve chamber accessibility and the use of a sloping design for the aluminum alloy lower crankcase. To take full advantage of this design, a false removable pan, with transverse ribbing, is provided, which also slopes down toward the rear.

Oil returning from the front-end drive housing and the valve chamber enters the pan at the front end, and any solid articles in it are caught between the ribs as it flows toward the pump at the rear. From there it is pumped to all bearings, including those in the upper ends of the connecting rods and those in the rocker arms.

Water passages are unusually large, especially around the valves and in the cylinder head, and the temperature is regulated by thermostat-operated radiator shutters. Oil temperatures are kept down by ribbing on the oil pan and by water passages—the upper part of the crankcase. An air cleaner is provided at the crankcase ventilator inlet, and another one at the outlet connection to the carburetor.

The Dill Mfg. Co., Cleveland, O., manufacturer of standard tire valves and valve parts, has appointed V. B. Myers to succeed E. V. Rahr in Detroit territory, with headquarters in the General Motors Bldg.

B. S. Byall succeeds H. E. Black in Philadelphia territory and J. F. McDaniel is in charge of Chicago territory.

En-ar-co
MOTOR OIL
White Rose
GASOLINE

YOU will make money if you handle these nationally advertised brands.

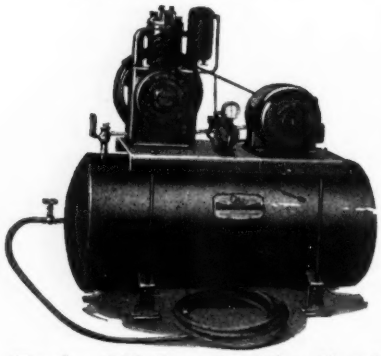
All grades of lubricating oils and greases.

The National Refining Co.
Cleveland, Ohio

MEASURE AIR VALUE

PRICE means little until you measure the value you get for your money. You get real air capacity at lowest possible cost in the—

Oro Model T-58



Here's a 2 H. P. unit with a 60 gallon tank at the price usually charged for a ¾ H. P. Two Stage unit. Will do all your tire inflating; is a splendid Paint Spray outfit; will operate one hydraulic hoist or your air operated gasoline pumps.

Sold to you by our jobbers for $215.

Cost no more to operate than many smaller units.

THE AU-TO COMPRESSOR CO.
201 Mulberry St. Wilmington, Ohio
Export Office: 126 Liberty St, N. Y., U. S. A.

'ORO AIR - - - - ALWAYS THERE'

More Small Gasoline Contracts On Refiners Books Now

Staff Special
TULSA

OKLAHOMA refiners as a group during the first half of 1929 will ship on an average less gasoline per contract than they did during the same period in 1928, but due to the fact that the total number of contracts is considerably greater than last year they probably, in the final analysis, will ship more gasoline on contracts, a check of a majority of the refiners in the state has revealed.

Several factors have contributed to this situation. In the first place refiners have done more contracting with the smaller independent jobbers and they have devoted their efforts to writing as many "100 per cent" contracts as possible. One reason for writing the smaller contracts this year has been the steady thinning of the ranks of large independent distributors, large refiners in the past several months having bought many distributing systems and tied them in with their own systems.

In the case of one large Oklahoma refiner, two contracts amounting to over 10,000,000 gallons of gasoline a year have been refused because the refiner has become convinced the accounts which he supplied last year are located in a state which is not his normal marketing territory.

This refiner reports that despite the fact he did not renew these two contracts, he has approximately 15 per cent more gasoline under contract than he had at this time last year, and he has 50 per cent more contracts on file. He said he was renewing approximately 85 per cent of last year's contracts.

Another refiner who last year had only one contract, which incidentally was for several million gallons a year, did not renew that contract but in the meantime acquired the refinery and large distributing system of another refiner and accordingly has more gasoline under contract than last year. This refiner is making an effort to write a few more 100 per cent contracts but reports he has not been pushing the contracts vigorously the past month or two.

Several refiners have made no effort to increase the total gallonage under contract. They have devoted their efforts primarily to renewing contracts which they had last year, with the view to having approximately the same gallonage under contract as they had in 1928. These refiners report they are renewing between 85 and 95 per cent of last year's contracts, and getting enough new accounts to offset these losses.

In a few cases they report the larger independents with whom they had contracts last year have refused to renew on the contract basis being offered generally, and the refiners accordingly have made two or more contracts with new, but smaller, accounts in order to get the same gallonage under contract. This naturally will increase the total number of contracts written by these refiners although the total gallonage probably will not vary materially.

Two or three refiners have not been pushing their contracts as vigorously as they did last year. They indicated they would attempt to sell more on the spot market and take their chance of getting their share of the business. One large company which has quite an extensive jobber trade has made no change in its policy which is to sell strictly on the spot market and accept no contracts at all. Another company did not have a drop of gasoline under contract last year, but an executive indicated recently that an effort probably would be made within the next 60 days to write a few contracts similar to those being written generally by Mid-Continent refiners.

Many of the contracts on which refiners will ship gasolines the first half of the year are lap-overs from the wave of contracting which was developed last spring and in the early summer. These contracts were marginal guarantees under tank wagon prices of 3.50 to 4.50 cents, and were written quite extensively through the Standard of Indiana territory.

Some of these contracts will not expire until late this summer while in a few instances they will run even longer than that. Several Mid-Continent refiners along in September and October put out a new form of contract which was based on the spot market as carried in some publication with a base guarantee of 3.50 cents under tank wagon price, with a 50-50 split proviso should the delivered price of gasoline be closer than 3.50 cents to the tank wagon price. This contract was written on the assumption that the Standard of Indiana would make no change in the spread of 2 cents between tank wagon and service station prices. In the event this spread was changed the contract could be cancelled by either party on 30 days notice, or

could be made subject to new negotiations.

Refiners had fair success with this contract in the early fall while the tank car gasoline market was relatively high as compared with tank wagon price and jobbers complained that they were being "pinched." The sales executive of one Oklahoma refiner said his men had literally "beat the bushes" the last five months of 1928 getting jobbers on these contracts, but that after the tank car price slipped downward to where the contract would not be operative, jobbers ceased to make the contracts. He said he had done virtually no contracting since the middle of December, but that due to the drive the latter part of the year he would have more contracts than he had at this time in 1928.

Book Reviews

A survey of sales promotion and bonus plans and sales contests and campaigns has been issued by the John M. Kumler Co., 35 East Wacker Drive, Chicago, in a booklet entitled "Let's Run a Sales Contest."

The booklet has been prepared for distributors and manufacturers. Successful sales plans used in stimulating sales among salesmen and in merchandising to the public are presented. The sales plans are illustrated.

The booklet may be obtained from the Kumler company in Chicago. The price is $2.

Less Fuel Oil Used in 1928 By Marine Trade

NEW YORK, April 19.—A decrease of 838,000 barrels, or 1 per cent in marine fuel oil consumption in 1928 as compared with 1927, was reported by principal companies engaged in this business to the American Petroleum Institute.

A total of 81,305,000 barrels of fuel oil were delivered to ships' bunkers at U. S. Ports and U. S. insular possessions in 1928, compared with 82,143,000 barrels in 1927. This is exclusive of fuel oil delivered to the U. S. Navy.

The Navy consumed about 6,300,000 barrels in 1928, which is about the same as in 1927. This includes diesel oil and covers consumption by naval vessels, but does not include consumption at yards and stations.

Total consumption by merchant vessels and by the Navy in 1928 was 87,605,000 barrels, compared with 88,443,000 barrels in 1927.

THE METRO COUPLEX CAB

HERE is the last word in practical construction combined with style, in tank wagon cabs. Where refinement of appearance is essential, specify

METRO COUPLEX

METROPOLITAN BODY COMPANY

Factory and General Office Bridgeport, Conn.

Branches at NEW YORK CLEVELAND PHILADELPHIA

The Biggs Boiler Works Co. Akron Ohio

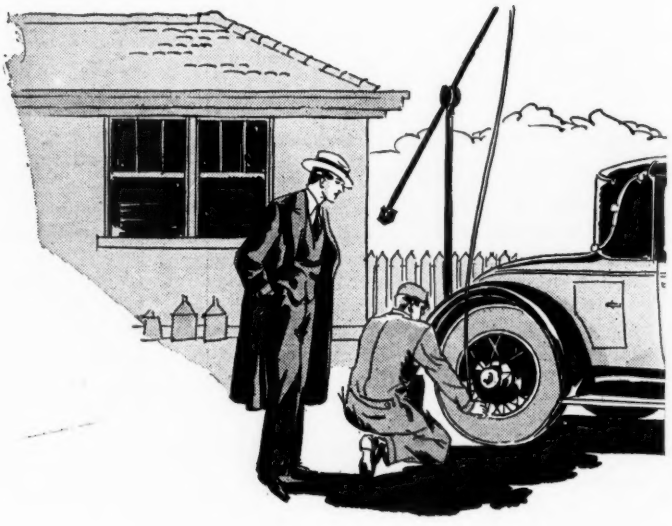
Bulk Storage and Station Tanks

Forty years successful experience; plant fully equipped for fabricating plate up to 1⅛" thick.
Pressure Stills for Cracking Process - Fractionating Towers - Dephlegmating Towers, Bubble Towers - Heat Exchangers - Agitators - Steam Stills - Crude Stills - Condenser Boxes, Run Down Tanks - Blending Tanks - Hemispherical Tanks - Blow Cases - Acid Tanks, Compounding Kettles - Storage Tanks to 80,000 Barrels - Smoke Stacks and Breechings, etc.

THE BIGGS BOILER WORKS COMPANY, Buchtel and Bank Streets, AKRON, OHIO
Eastern Sales Office: 300 Madison Ave., New York *Western Sales Office:* 35 South Dearborn St., Chicago

DILL

Standard Tire Valves and Valve Parts



EVERYONE who drives into a gas station is a potential buyer of a Dill Valve Inside, Valve Cap, Dust Cap or Instant-On.

You have an easy opportunity to sell him while he is using your services.

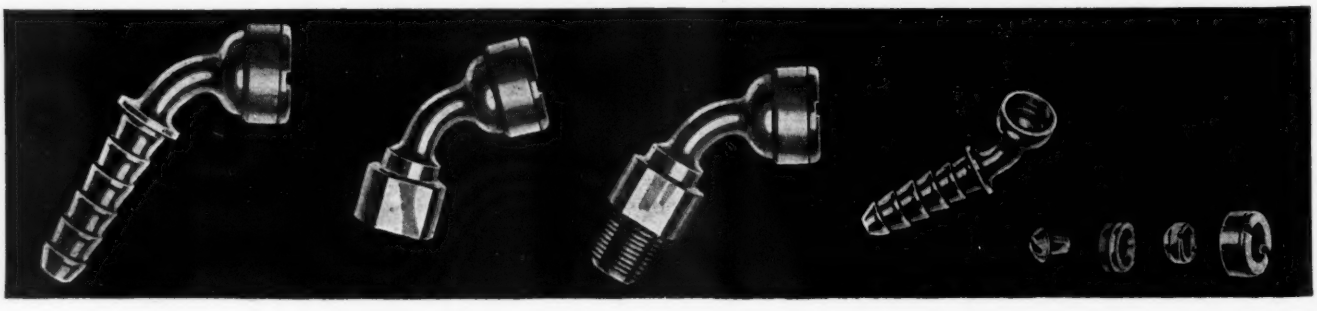
Even though he has no immediate need for valve equipment, he can be sold a set of valve insides or caps to carry with him as "spares".

The gas station should get this extra profit.

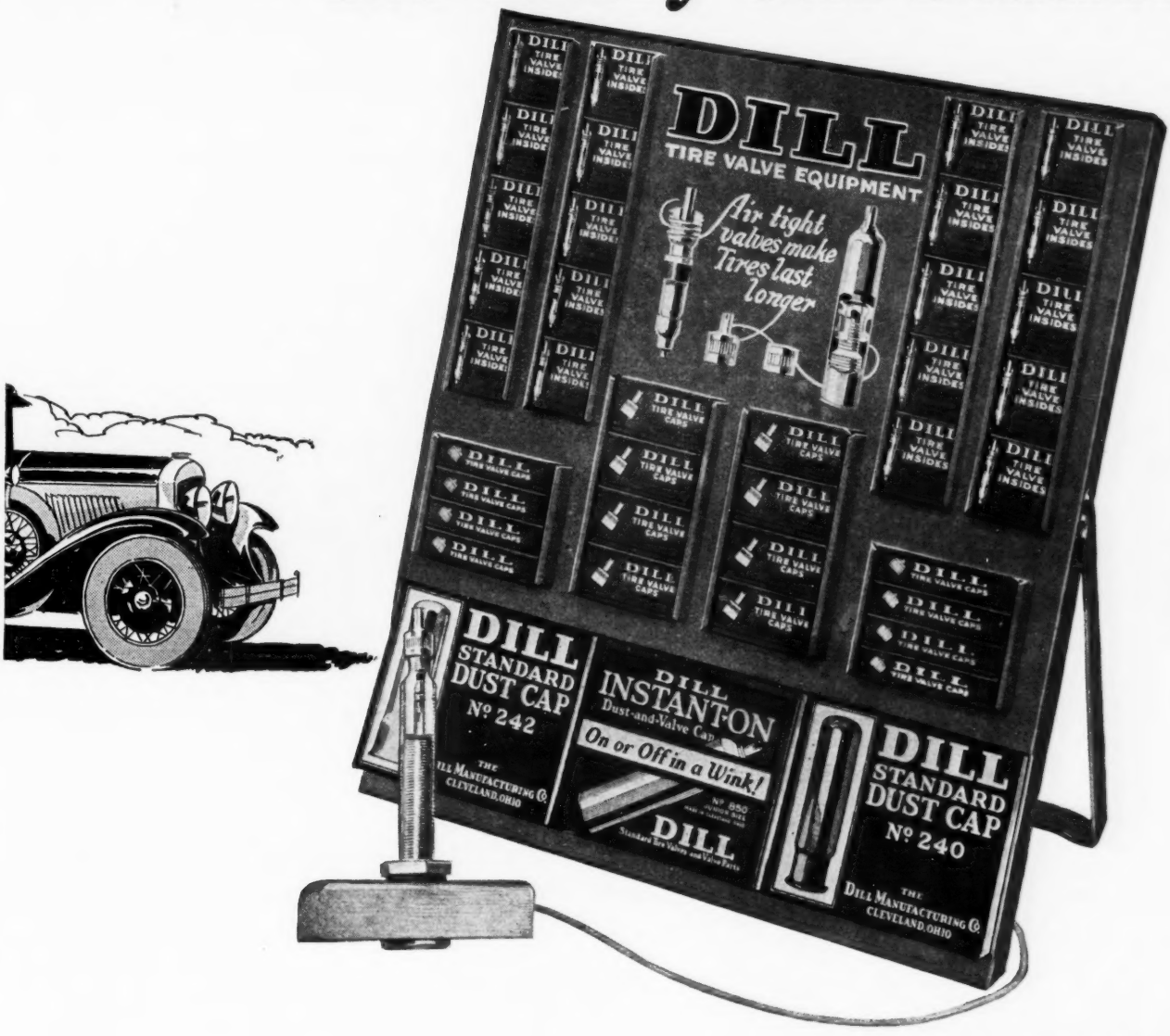
It requires only a few words by the attendant while the car is being serviced —and the additional income per month will surprise you.

A new metal display stand, lithographed in attractive colors will help do the selling. It carries Dill Valve Insides, Valve Caps, Dust Caps and Instant-Ons—attractively shown and conveniently packaged in metal boxes.

Dill Products, after undergoing the most searching tests, have been adopted by



An Extra Profit for Every Gas Station


DILL
TIRE VALVE EQUIPMENT
Air tight valves make Tires last longer
DILL STANDARD DUST CAP Nº 242
DILL INSTANTON Dust-and-Valve Cap
On or Off in a Wink!
DILL STANDARD DUST CAP Nº 240

Win $100 by selecting winning name for this attractive new Dill Display Unit. Dealers need not purchase this display unit to compete, but may receive from us, without charge, complete descriptive material enabling them to suggest a name and enter it in the contest.

fifty-six tire manufacturers—the reward of sheer merit. Dill Products are carefully designed and built—thoroughly inspected—and fully guaranteed.

You can depend on any product bearing the name DILL.

For full particulars write direct to

THE DILL MANUFACTURING CO.

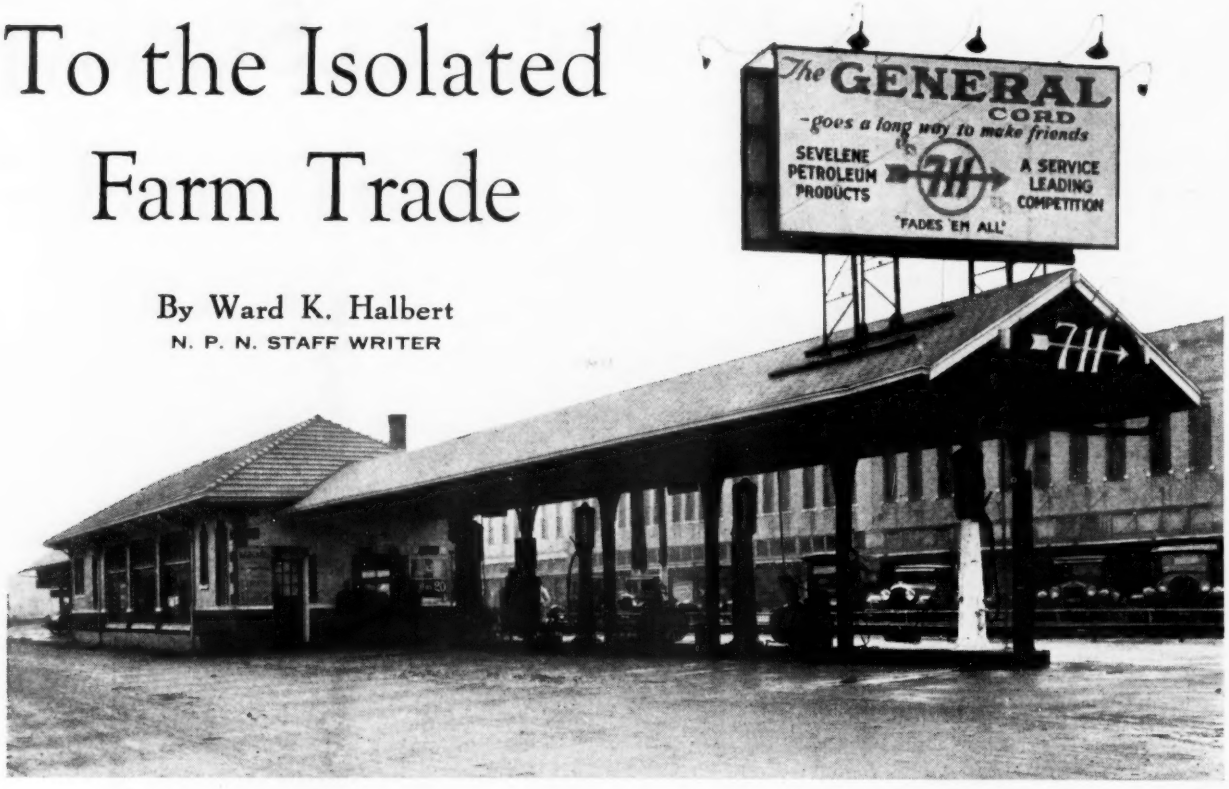
Cleveland, Ohio

Manufactured in Canada by the Dill Manufacturing Company of Canada, Ltd., Toronto, Ontario

Dill has developed a special line of air chucks for service station use—sturdy—strong—free acting—and easy to use. Try them when you next change chucks, and see the difference in efficiency and length of service.

Taking Big Town Lubrication Service To the Isolated Farm Trade

By Ward K. Halbert
N. P. N. STAFF WRITER



Seven-Eleven Oil Co.'s station No. 2 in Greenwood, Miss., is the Alma Mater of J. D. Owings in the science of lubrication. Now he is conducting "university extension" work in his specialty among the small towns of the Delta

GREENWOOD, Miss.

TEN good little agricultural centers in the Mississippi Delta are this spring enjoying the unique services of a traveling lubrication station. It comes to town like a road show, except that it comes once a month regularly. An advance agent arranges for a location and takes care of preliminary advertising and other details.

The "Greasing Chautauqua" as it might be called, is owned and managed by the Seven-Eleven Oil Co. of Greenwood, Miss., an Independent jobbing company, headed by W. V. Tarver who is president of the Mississippi Oil Men's Association. J. D. Owings is the lubrication engineer in charge of actual work.

Complete lubrication of automobiles in small country towns is a grave problem to a great many oil men and it is no less a problem to the motorists themselves. While the country merchant and the small town garageman are justified by volume to handle gasoline and motor oil, greasing does not interest them.

Available greasing business in the country is too small to justify the wages a skilled lubrication man wants and can earn in town. The village garageman is not a greaser. He looks upon himself as a mechanic and considers greasing a menial job, far beneath his dignity. Even if he were willing to do it when not working on a repair job, the average country garageman is not equipped to do a grease job rapidly and well and the equipment is expensive.

W. V. Tarver
President of the Seven-Eleven Oil Co., and also president of the Mississippi Oil Men's association

Circumstances thus conspire against the life of the farmer's automobile which actually needs more greasing attention than any car. Dusty roads aggravate contamination of motor oil and rough roads put squeaks in the body that cars driven on pavement seldom develop. Almost any used tractor is a testimonial that farmers are not good at lubrication work themselves.

Instead of advocating a complete greasing job for farmers' cars every 500 miles, Mr. Owings recommends complete lubrication once a month. Lubrication done regularly by the month is better than no lubrication at all, and in order to justify the company's investment in men and machinery he has to operate on a schedule like the circuit riders of old and divide his services among his "parishioners" as their needs require.

Mr. Owings does not divide his month precisely into ten 3-day stands,

THE VERY BEST

that can be made from Nature's finest material

Coreco refining leaves out one-third of the "by-products" (which are good for other purposes but not for gasoline motor lubrication)—this third is allowed to remain in ordinary motor oils.

Coreco Pennsylect Motor Oil is the very best that can be made from Nature's finest material with the latest refining methods. The fact that all non-heat resisting and all non-viscous oil of no lubricating value to the gasoline engine has been removed, adds one-third to the lubricating value of Coreco Pennsylect Motor Oil—when compared with ordinary motor oil.

Why not sell this high quality Pennsylvania motor oil to your trade?—it will help you build a list of satisfied customers.

SPECIFICATIONS OF CORECO MOTOR OILS

	Gravity	*Flash*	*Fire*	*Color*	*Vis @ 212*	*Cold Test*
Light Medium	29.6	450	515	6	60/62	30
Heavy Medium	29.3	455	520	6 Plus	65/67	30
Heavy	28.4	465	535	7	80/82	30
Extra Heavy	27.7	480	555	7 Plus	97/100	30
Special Duty	27.2	500	575	8 Minus	108/111	30

An Unusually Attractive Proposition for Distributors is now available

The Coreco franchise offers you ample local advertising and sales helps—to build up a volume of motor oil business in your community. We will gladly send details of the Coreco proposition to dealers in territories in which we are not now represented. Wire or write, today—learn the facts about the *very best motor oil that can be made from Nature's finest material.*

CORECO

PENNSYLECT

MOTOR OIL

Guaranteed 100% PURE PENNSYLVANIA OIL

The Continental Refining Co., -:- -:- Oil City, Penna.

one at each town. Some places offer enough patronage to justify a 4-day stop and others require only two days. It all depends on the size of the town and the extent of the territory from which it draws farm trade.

There is very little uproar about the program. Mr. Tarver has a conscience on the subject and he has not allowed it to be operated on the principle of a medicine show. Street corner sales methods are carefully avoided. "If an oil company has a moral obligation to its customers it is to provide correct lubrication," he says, "and the traveling lubrication station is to fulfill that obligation. It takes both intelligence and integrity to do a good greasing job."

There is no striped tent and no noisy radio. The publicity is dignified. Whoever is the dealer for Seven-Eleven Oil Co., in the town where Mr. Owings will appear next, acts as advance agent. He has a fairly accurate list of his own customers whom he can reach by direct mail. He attends to the posting of such billboard announcements as are needed. And he arranges an advertisement in the local newspaper read most by residents of his neighborhood.

In selecting the ten places where Mr. Owings is carrying on his specialty job, he and Mr. Tarver made a careful survey of the small towns grouped about Greenwood where the company had dealers. They picked the towns where the best dealers were. Unless the dealer sold as much as 3000 gallons of gasoline a month, his location was not even considered as a suitable stop for Mr. Owings.

Once he is properly advertised and the appointed day arrives, Mr. Owings drives into the town where he is expected, in his own car. His tools are in the back end of the car. The local dealer has made it a point to "clear decks" for three busy days. His own place of business is orderly and clean and special attention has been paid to correct display of merchandise. Even the grease rack has been cleaned and given a fresh coat of whitewash.

MR. OWINGS unloads his gear flusher and his grease guns, along with such other special equipment as he uses in his trade. It is a rather elaborate display of tools, shining and clean. The bright steel wrenches, together with the brass and nickle of the grease gun and flusher are sufficient to catch the eye of any farmer boy and leave the impression that Owings has knowledge and skill.

The locals call him an "expert" and, whatever that is, he is one. Mr. Owings is a man of 30 who knows his business. He is youthful and active but past the age of "kid stuff." He starts at each town with a clean suit of coveralls to harmonize with the bright surroundings and starts every day with a fresh shave which gives him a successful look, no matter how much grease he may get on him.

Mr. Tarver knew what Owings could do before he employed him. He worked for the company for some time on a previous occasion, doing lubrication work at Station No. 2 in Greenwood, shown in an accompanying picture. With the help of two negro boys at that station alone he built up the lubrication business to an average of $50 a day during the peak month of the year.

After leaving the Seven-Eleven Oil Co. for a few months Owings returned to take this special work. In the mean time he got some valuable experience in the employ of a major oil company where service station discipline is notoriously severe. And besides that work he got some merchandising experience in a leading department store in a southern city.

One of Owings' best sales strokes on his present job is the use of a lubrication chart. He has the chart for every make of automobile in use, bound in a book. This book always occupies a conspicuous position near where he is at work. Sometimes that is only on the fender of his own car, but it is there more to show than to study. Like any experienced operator, Owings could grease any ordinary automobile without the help of a chart. But the book lends atmosphere.

WHEN the stage is all set at the station for Mr. Owings to go to work, if no customer is on the ground waiting for service, he proceeds like any other service station salesmen to wait on the dealer's trade at the gasoline pump, or at least to help with it.

"When a car comes in, I look it over," said Mr. Owings, "and see what it needs. Then I study the man at the wheel and try to decide on what to say to him. It is not always easy on seeing a stranger to select some pleasant line of approach.

"Usually I go to the gasoline tank and ask if I can fill it up. When that is done I begin to get ready to raise the hood, at the same time asking him if I may have a look at his oil. If the gauge indicates that he could use a quart of oil I try to sell it to him. If the oil is very low I suggest a complete change.

"'It will take nearly half a gallon to fill your crank case, sir, it would really be better if you drained the old oil out and put in a fresh batch', is about the usual way I suggest it.

"While I am draining the oil or (if he refuses) while I am filling the radiator, I say: 'If you can spare me half an hour tomorrow some time I will be glad to grease your car thoroughly and renew its oil.' I never try to rush them into any sort of a purchase.

"Then, if I have a chance, I lay the chart of his own chassis out before him and say, 'If we overlook a single point where oil or grease is required on your car, according to the chart, we will not charge you anything for the job.'

"Although we do not rush them into it, a great many of these incidental gasoline customers actually drive right on the grease rack and take service at once, especially if they are the regular customer of our dealer and have been informed that I am coming.

"As soon as one drives on the rack I suggest that he stay and watch me work. Most of them really want to do that any way. More than half of them actually stay right with me while I am working and that gives me a chance to talk to them. If I find a dry connection that never has been greased in the life of the car I call his attention to it. If I scrape and paint a rusty place under the fender I make sure he notices it.

"It is easy to bring up the sub-

Attention, Historians!

ENTER the name of W. V. Tarver on the page with James Redpath and Melvil Dewey. They have proven that serving country trade is profitable if you know how. Rustics are just as appreciative of quality and able to pay for it as city dwellers.

Redpath originated the Lyceum course and took first class entertainment to jerk-water towns. The suburbanites appreciated it. The Punch-and-Judy show died of competition and the Chautauqua grew into several giant institutions.

Dewey started the traveling library. It never made him rich but it is still taking good literature to grateful book lovers in places too small to be noticed by the Carnegie foundation, and it is paying its own way on merit.

Tarver has started a traveling lubrication station. It spends three days a month in ten Mississippi towns that are not big enough to support a service station each. But they support one collectively and it makes money for all concerned.

Second-rate entertainers, mechanics, teachers and ball players are relegated to the "sticks" because the volume of business there will not pay for anything better—not because country people prefer inferior merchandise and poor service.

Sharlite Your Station

Use Dominating Light to Attract Trade

THE use of effectual exterior illumination adds much to the attractiveness of your station, enhances the appearance of your building and equipment and is an impelling influence to passing motorists to stop for service.

The SHARLITE will enable you to attain the utmost in service station lighting at a moderate cost.

Send for Bulletin SL-1

Price with Bracket

$50.50

Complete with Standard

$81.00

F. O. B. Sharpsville, Pa.

SHARPSVILLE BOILER WORKS CO.—SHARPSVILLE, PA.

Necks, Shoulders, Bottoms, Side Walls—all perfectly suited to do the finest kind of a job for your oil samples.

Made of perfume bottle glass, distortionless, beautifully clear, with ground and polished bottoms if you wish, and with necks that hold the cork with bull dog grip—these are America's favorite sample oil bottles because they are America's best.

Sizes 2-4-8 ounces. Samples on request.

Illinois Glass Co.
Alton Ill.
ESTABLISHED 1873

ject of dust and pollution of motor oil while draining the crank case and from there it is easy to explain that dust gets into the gasoline tank too and forms gum in the bottom of the tank and in the gas' line. As often as possible I get the customer to clean out his crank case with flushing oil and let me empty his gasoline tank and wash it out, clean the screens, wash out the bowl of his carburator and blow out the gas' line.

"I always put fresh, distilled water in every customer's battery. That really ought to be done every two weeks but once a month is better than not at all. If I have time, I suggest putting top dressing on every customer's car. Our dealers all carry top dressing and he can buy it right there. I do the work free. It only takes about 15 minutes.

"Some time in the course of the conversation I get the man's name and address, R.F.D. box number and all. To this record I add the make and model of his car. Just before he drives away I always tell him I am coming back in a month and will be glad to serve him again. I tell him he will not have to remember the date, because we will send him a letter ahead of time.

"If a man's car is comparatively new, I tell him if he will only spend $18 a year with me I will guarantee him a better turn-in value on this machine than he got on his last one. If a man gets his car lubricated once a month (every time I come around) for a year I would be willing to sign a certificate of proper lubrication to help him raise his turn-in value.

"If we do a complete job on a man's car, he is sure to notice a difference. Cleaning the gasoline tank and line makes his fuel flow smoother and his motor run better. Greasing the car makes it ride better. That is what brings them back. I have found that a plantation negro is just as appreciative of a good lubrication job as any city man who owns the most expensive car he can buy."

The division of the expense and profit from this lubrication merchandising campaign is quite simple. The dealer in the town where the work takes place receives 60 per cent of each day's gross recipts taken in by Mr. Owings. The Seven-Eleven Oil Co. gets 40 per cent and Mr. Owings is on a salary of $150 a month and a 10 per cent commission. This is a beginning arrangement practically sure to improve from Mr. Owings' standpoint.

The oil and grease that goes into the customers' cars is bought of the dealer in the town where the work is done. The company sold the dealer all the material in the first place, which is its main avenue of profit in the proposition.

"Experience has shown, over the few months we have been operating it, that the average customer spends $1.25 chassis lubricant, $1.40 for oil in his crank case, and 40 cents for gear compound," Mr. Tarver says. "Money spent for top dressing and the like is nothing to us. The petroleum bill totals $3.05 per car on the average. For easy figuring, say the average bill is $3.

"Mr. Owings has very seldom fallen short of ten cars a day on his out-of-town excursions. Thus the gross income runs around $30 a day. Sixty per cent of the $30 is $18 for the dealer. The merchandise cost him $11.50 which leaves him a net return for the day of $6.50 to which he contributed very little, except the advance arrangements. The company finances the advertising.

"The company's 40 per cent of that $30 is $12. Mr. Owings' 10 per cent commission on gross sales is $3 and his flat salary for the day is $5 which means he has earned $8 that has to come out of the company's gross return of $12. In other words the company has a net-back of $4 from Mr. Owings' work. That is sufficient to cover the advertising, especially on a three-day stand.

To Inspect Installations Of Pumps in New York

CLEVELAND, April 19.—Gasoline pump installations in the state of New York must be approved by an inspector of the state department of agriculture and markets, or by a city or county sealer, before being put into use.

This is called for by a new section added to the weights and measures laws at the last session of the state legislature. It is effective May 1, according to Chas. J. Reynolds, director of the bureau of weights and measures. The new section reads:

"No gasoline pump hereafter installed shall be used for the purpose of dispensing and measuring gasoline until inspected by an inspector of the department, or by a city or county dealer and found to have been properly installed and to be properly adjusted so as to measure accurately the gasoline to be dispensed by it. If the inspection shows that such pump has been properly installed and is properly adjusted to deliver accurate measure, the pump shall be sealed or marked with an appropriate device by such inspector or sealer."

"It does not matter whether the pump has been approved by the state department, no operator will be allowed to use his pump before having the sealer test and seal it," said Mr. Reynolds. "We found a lot of trouble arising from improper installation of pumps and that pumps had been installed by almost anyone and put into operation before the sealer had had a chance to locate them."

SEABOARD CHEMICAL COMPANY

Industrial Chemical Mfg. Co., Inc.

Petroleum Jobber

1- Our recent consolidation of six strategically located distilleries together with warehouse stocks in 19 cities is the assurance we give to the jobbers of our ability to maintain shipping schedule regardless of the demand or the period.

Warehouse Stocks

Atlanta	Kansas City	Pittsburgh	St. Louis
Boston	Newark	Buffalo	Brooklyn
Detroit	Baltimore	Minneapolis	Rochester
Chicago	Louisville	Cleveland	Grand Rapids
Philadelphia	Cincinnati	Charlestown, Mass.	San Francisco

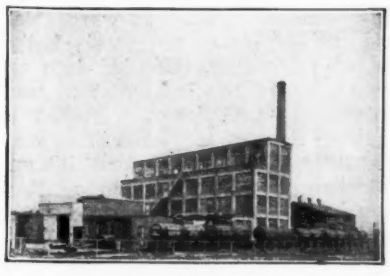
2- Rossville sale policy is the distribution of Denatured Alcohol through the recognized distributors.

3- We will gladly discuss with the jobber the "Rossville Sale Aids for Distributors of Denatured Alcohol".

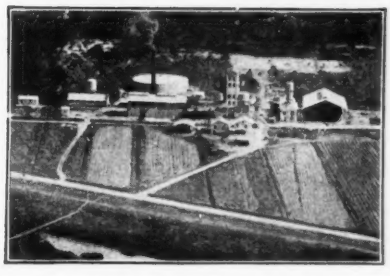
ALCOHOL CORPORATION

New York City

in freshly painted drums. We pay return freight on empty drums.



NEWARK, N. J.



BRAITHWAITE, LA.

WESTWEGO, LA.

Wooden Indian Gets New Lease on Life As Gasoline Trade Puller

By Allen S. James
N. P. N. STAFF WRITER

ARDMORE, Okla.

A LITTLE more than three years ago certain officials of the Wirt Franklin Petroleum Corp. at Ardmore grew tired of the continual scramble for gasoline business in Standard of Indiana territory. They decided to look for a less competitive territory.

They found it—in their own back yard!

Take a map of Oklahoma, and with Ardmore as the center start with a radius of a little over a hundred miles and draw a circular line from the Red river out near Frederick up through Oklahoma City and Edmond and thence downward toward the Arkansas line to the southeast. The section within the circular line and bounded on the south by the Red river gives a fairly accurate picture of the territory in which the corporation has operated the past three years.

Just in case any one should be skeptical about there being a market in that territory sufficient to take the output of a 4000-barrel refinery, with five or six other refineries operating within that district, let him ponder the fact that company in the past three years has not shipped a single car of gasoline outside the State of Oklahoma!

Every motorist in the southeastern quarter of Oklahoma knows "Chief Palacine." Wherever there is a Wirt Franklin Petroleum Corp. service station, there is the Chief, near the curb, commanding attention to himself and the station at his back

This market was not developed overnight. Comprehensive surveys, intensive sales effort and the organization of a retail marketing division to work in cooperation with the production, pipe line and refinery departments were the first steps undertaken.

The survey revealed that the company by selling within that 100-mile radius could enjoy a netback approximately 10 per cent higher than if it attempted to ship gasoline into Standard of Indiana territory. This higher realization was due to the more advantageous freight rates for the short hauls.

For the immediate vicinity of Ardmore the switching is less than 0.125 cent a gallon. The freight rates range from that figure up to approximately 1.50 cent a gallon. The company has no accounts which take a freight rate of more than the latter named figure.

Jobber accounts were solicited. Stations and station sites were acquired by purchase or lease. The procedure along this line was much the same as that of other oil companies.

There was one plan adopted, however, which is not in general use among refineries having their own distribution. D. A. Cocoran, head of the sales department, was given the authority to tell the refining department how much gasoline to produce. The refining department does not tell the sales department that the refinery will make a certain amount of gasoline in a given period and that the sales department must sell it.

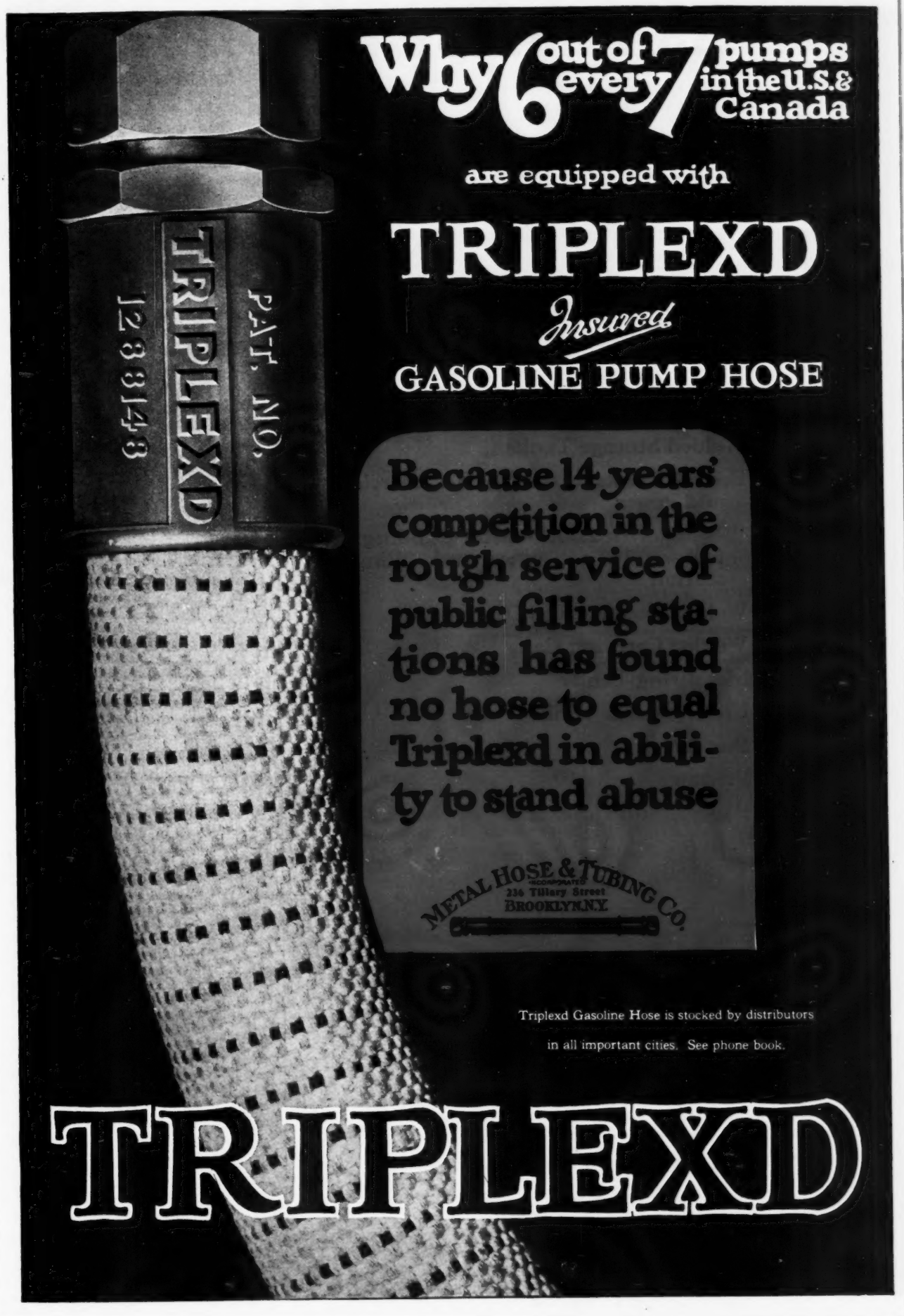
The sales department decides what will be the approximate requirements for a given period and instructs the refinery department to make that much gasoline and no more. That plan prevents the refinery from overproducing its market. Company officials have cast overboard the idea that the more crude charged to stills the more money the refinery will make.

The company needed a trade name for its products. Oklahoma, the old Indian territory, has many an Indian legend. Mr. Cocoran one day heard the legend of an Indian chief who was noted for his friendliness. The chief had been named "Palacine," which literally translated means "A Friend." The name "Palacine" was selected for the company's gasolines and motor oils.

A sign or a symbol of some sort was the next requirement. Mr. Cocoran remembered as a young man the wooden Indians which had stood in front of cigar stores. He tried to learn who had made those Indians. His search was unavailing. Then he remembered the unusual outdoor advertising he had seen in California. He wrote a friend to ascertain who had made those signs. Within a short time he was informed that a company in Dallas had a franchise to make outdoor signs similar to the ones he had seen in California.

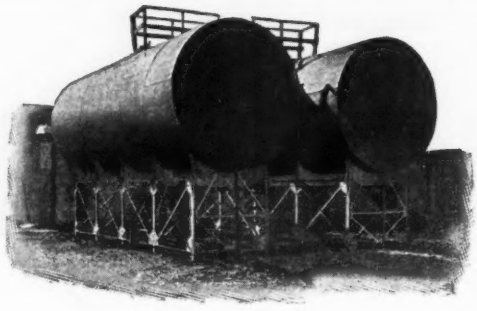
A few months later there was placed in front of one of the company's stations in Ardmore something new in the way of signs. It was the statue of an Indian chief, with right raised, palm forward, left hand at hip—the universal Indian sign of friendship. Molded into the rock on which the Indian stood were the words "A Friend." Molded in the three sides of the lower base were the words "Palacine Motor Oil" and "Palacine Gasoline." Three flood lights in the base illuminate the statue at night.

This statue was placed as close to the curb as possible. Standing approximately 11½ feet high, a


Why 6 out of every 7 pumps in the U.S. & Canada
are equipped with
TRIPLEXD
Insured
GASOLINE PUMP HOSE
Because 14 years' competition in the rough service of public filling stations has found no hose to equal Triplexd in ability to stand abuse
METAL HOSE & TUBING CO.
INCORPORATED
236 Tillary Street
BROOKLYN, N.Y.
Triplexd Gasoline Hose is stocked by distributors in all important cities. See phone book.
TRIPLEXD
PAT. NO.
1288148
TRIPLEXD

Complete Market Station Equipment

Columbian Equipment comprises practically everything needed for the bulk station.



Welded Storage Tanks

Bolted Tanks up to 10,000 barrels and larger

"Readyformed" All-metal Buildings for warehouse, office and filling station

Welded Buckets and Drums

Welded Carrying Cans

Measuring Tanks

Underground Tanks

Pumps

Pressure Tanks

Faucets and Hose, and

The famous Columbian line of Partition Mounted, 3-Point Supported Welded Truck Tanks and Trailer Tanks from the smallest to the very largest capacities.

Write for Oil Equipment Price List showing full line of equipment

COLUMBIAN STEEL TANK COMPANY

EST'D 1894

1405-1625 WEST 12TH STREET KANSAS CITY, MISSOURI

motorist could not help but see the Indian with his upraised hand. It attracted attention. It was a new departure in attracting the public to a company's business.

The idea of the Indian in front of the station met with such success that others were ordered. It was not long until station owners in that territory were asking Mr. Cocoran how they could get one of those big Indians placed in front of their station. When a station owner agreed to handle the Palacine brands exclusively, then and only then was he provided with an Indian.

ONE station owner asked Mr. Cocoran recently how he could get one of those Indians. "What brands of gasoline are you handling now?" Mr. Cocoran asked.

The station owner replied that he was handling gasolines made by four different companies.

"If you want to handle our product exclusively, we'll put an Indian in front of your station," the man was told.

"I can't do that Mr. Cocoran," the owner replied. "I get a good gallonage handling all those brands."

No deal was made. The owner returned to his business. About a month later, however, he phoned Mr. Cocoran, and the conversation was about as follows:

"Hello, Mr. Cocoran, when can you get me one of those Indians? Sure, I'll contract to handle your products exclusively. Why do I want an Indian? Say, this competitor of mine here who has one of your Indians is getting all the business. You know there are a large number of Indians living around this section. When they drive into town and spot that Indian they turn right into that fellow's driveway, whether they actually need any gasoline or not. I just gotta have an Indian."

He got the Indian.

The company at present has between 35 and 40 of the Indian statues within that 100 mile radius. The company has received letters from all states of the Union, written by tourists who in passing through that section observed the unusual advertisement and written to inquire about it. The requests became so numerous that Mr. Cocoran has issued a small booklet giving the legend of Chief Palacine.

An amusing story was told of how one of the tank wagon drivers succeeded in placing one of the statues at an important highway intersection near Ardmore. The driver went to the landowner to get permission to erect the statue. The owner was an old Indian. The driver asked if he could place a sign on his land.

"Humph—too dam many signs on

road now—make country look bad," the Indian told the driver.

"Well, come on down and see the kind of sign I want to put up," the driver replied.

When the old Indian saw the statue on the truck, his eyes sparkled, and he said, "Heap big Chief. Put um up—put up plenty chiefs. Sure, sure." And he gruntingly made his way back to his house.

Why the Indian statue? Here's the reason—told in the form of a conversation Mr. Cocoran had with an Oklahoma City citizen one day. The citizen didn't know he was talking to an official of the company owning the station under discussion.

"You know," the citizen said, "I've passed that station a thousand times. Never paid any attention to it. All stations look alike to me. Some are painted this color and that color, some have two pumps, others more. But fundamentally all stations look alike. One appealed to me about as much as another.

"One day I drove by that station. Right in front of me almost was a life sized Indian on a rock, with hand upraised. That Indian stood out in front of that station like a sore thumb on a hand. It immediately caught my attention. Now whenever I need service I spot the Indian and turn in."

The company has used considerable newspaper space to tie in with the Indian statue. This newspaper advertising, however, has been strictly localized. The company has made no attempt whatever to advertise its product outside the 100 mile radius in which it operates.

And the cost of an Indian statue? Mr. Cocoran said that he could put up approximately four Indians for the price of a page advertisement in one of the state's larger newspapers, which figures down to around $200 an Indian. And the statue is permanent—the only attention necessary being a little bronze paint once or twice a year.

The company at first owned and operated most of the stations in which its products were sold. The past year or so these stations have been leased to responsible men on the theory that a man having an interest in the business he is handling will give it more careful attention than a station attendant who is employed on a straight salary basis. This newer plan has proven entirely satisfactory, Mr. Cocoran said, and at present the company actually operates only a very small number of stations.

Committee Widens Tolerance For 10% Temperature

CLEVELAND

CHANGES apparently designed to permit the use of larger amounts of well stabilized natural gasoline in motor fuel have been made by the technical committee of the Federal Specifications Board in the tentative specifications for U. S. Motor gasoline and a new more volatile grade of motor fuel proposed to be established for government purchase.

The latest tentative specification has been handed back to the oil industry for study and comment.

The changes were made following the oil industry conference, called by the American Petroleum Institute to discuss with representatives of the government, the proposed changes in specifications, and a later meeting between the advisory board, representing the oil and automobile industries, and the technical committee. The latter is composed of technologists of the various government departments who act as advisors to the Federal Specifications Board.

The latest proposed U. S. Motor specification is changed only in the way of easing up on the lower limit of the 10 per cent temperature requirement. The paragraph regarding the 10 per cent point in the latest proposed draft, reads as follows:

"When 10 per cent has been recovered in the receiver, the thermometer shall not read more than 176 F. nor less than 122 F., provided that for each per cent distillation loss less than 4 per cent obtained in the A.S.T.M. distillation, the minimum 10 per cent temperature requirement shall be lowered 5.4 degrees F.

"Note: When U. S. Motor gasoline is to be used for some special purpose such as that requiring tropical storage, the government reserves the right to raise the lower limit at the 10 per cent point to not higher than 140 F. with the same corrections for distillation loss as given above. This limit, however, should not be applied unless absolutely necessary since the gasoline so procured is less satisfactory for general purposes."

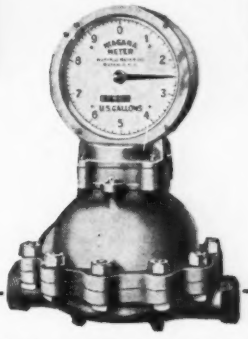
The 50 per cent point is left unchanged at 284 F. and 90 per cent point at 392 F. At least 95 per cent recovery is specified.

The previous tentative change in the U. S. Motor specification, which was discussed at the meeting March

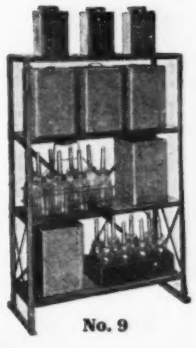
ACCURACY

Regardless of how much or how little gasoline or oil passes through a Niagara meter, it accurately registers and records, preventing loss, theft or favoritism.

And a Niagara repays its cost by enabling you to sell and profit on the gasoline and oil that would be unaccounted for without a meter! Send today for our newest catalogue.



BUFFALO METER COMPANY
2889 Main St., Buffalo, N. Y.



EQUIPTO

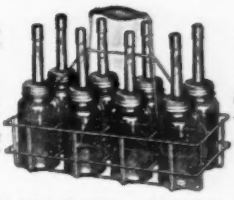
ONLY $5.45

No. 9

You can pay more

SURE! But you can't beat this oil service stand for quality and long life. None better made. All steel. Adjustable shelves holding 150 lbs. each. Olive green baked enamel. Gives permanent, attractive display—indoors or out. Send $5.45 today for quick delivery. Ask for "Manufacturer's Bargain Price List" of the famous Equipto line. Big savings!

Special price now available on these WBAC Equipto oil service units. High quality. They give long, efficient service. Order now!



Sets include 8 jars with spouts and caps, and a sturdy wire basket. Legal for all states. 3 sets, $8.85. 6 sets, $16.75.

All prices f. o. b. Aurora. Order by number.

AURORA EQUIPMENT CO.
AURORA, ILLINOIS

Skilled Supervision

Guarantees the Quality of Gulf Products

COASTAL AND PARAFFINE CRUDES
GASOLINE — LUBRICATING OILS
NAPHTHA — GAS — OILS
WAX — PETROLEUM COKE
CYLINDER—ENGINE—CORDAGE

Gulf Refining Company

General Sales Offices
PITTSBURGH, PA.

District Sales Offices
New York, Boston, Philadelphia, Louisville, Atlanta, Houston, New Orleans

"Burning Liquid Fuel"

LEARN real facts which have never been published before on the subject of burning liquid fuel, by W. N. Best, the recognized authority.

Send your order and check for $4 to—

National Petroleum News
1213 W. 3rd Street Cleveland, Ohio

15, provided for a maximum 10 per cent point temperature of 176 F. and a minimum of 122 F., allowing lowering of the minimum temperature by only 3 degrees F. for every per cent distillation loss less than 4 per cent.

The latest proposed specification for the more volatile fuel, calls it Motor Fuel V and gives the following reason for its existence:

"This specification covers the grade of fuel used by the U. S. government and its agencies for motor vehicle and similar engines under special conditions where a fuel less volatile than domestic aviation fuel is satisfactory."

The proposed distillation range for this fuel is:

Ten per cent point, not more than 158 F. and not less than 122 F. with the same allowance for low losses that is contained in the U. S. Motor tentative specification, namely, 5.4 degrees F. lowering of the minimum 10 per cent temperature for every per cent of distillation loss below 4 per cent.

Fifty per cent point, 257 F.

Ninety per cent point, 356 F.

Recovery, at least 95 per cent.

This is the same as the specification first proposed by the technical committee, except for the greater allowance for temperature reduction at the 10 per cent point for small distillation loss, which means a well stabilized product.

The advisory board suggested to the technical committee after the March 15 meeting that the specifications for the new motor fuel be as follows:

Ten per cent point, 158 F. maximum, minimum eliminated.

Fifty per cent point, 275 F.

Ninety per cent point, 383 F.

End point, 419 F.

AC Spark Plug Co., Flint, Mich., reports a 15 per cent increase, and a new high mark, in the first quarter's equipment and replacement sales, over sales of the corresponding period last year.

The Globe Mfg. Co., Battle Creek, Mich., manufacturer of car washers and air equipment for garages, auto laundries and filling stations, has appointed P. J. Daniels as sales and advertising manager.

Mr. Daniels was formerly an executive for nine years with the Duplex Printing Press Co., and more recently organized the Lubrication Devices, Inc., of which he was secretary the past year.

Griscom-Russell Co., New York, recently established a new sales office at the Union Trust Bldg., Cincinnati, O.

IT'S A WONDER!

"You bet there's a big difference in pumps. Some merely dispense gasoline, when the customer says "Gim'me five."

"My Clear Vision pumps are more than that — they attract trade — they're real salesmen that my customers admire and trust. And fast! They've got the speed to make rush hours seem like sport.

"In the way they stand up, and stay on the job—season after season—they're just wonders."

* * * * * *

Clear Vision Filling Station Equipment has built a bigger and better business for hundreds of filling stations the country over. Write today for full particulars and prices on Clear Vision Pumps, Hoists, Air-Shot Grease Guns, Air Compressors, etc.

THE CLEAR VISION PUMP COMPANY

Wichita, Kansas

Pacific Coast Factory: 1165 W. Ocean Ave., Long Beach, Calif. Phone 668-345.
Tulsa Branch: 821 E. First Place, Phone 4-5009.
Kansas City: 1313 McGee St., Phone Victor 2606.

Interior of one of the sleeper coach buses for Chicago to New York service

Sleeper Coaches Are Added To Bus Service

CLEVELAND

"PULLMANS" have been added to the transportation facilities of bus lines. Two sleeper coaches for Chicago to New York service, with passengers transferring at Cleveland, have been built.

These buses have a capacity of 200 gallons of gasoline, 24 quarts of motor oil, 60 pounds of transmission gear compound, and 30 pounds of differential compound. The chassis is equipped with a one-shot lubrication system.

At the end of each trip the motor oil is changed, and the buses are run over pits for inspection. The buses average 4 to 6 miles to a gallon of gasoline, and refuel approximately every 40 miles.

There are sleeping facilities for 18 persons. Fittings and equipment include forced draft ventilation which changes the air every four minutes, upper and lower berths have double outside windows with non-shatter safety glass and screens in summer, cooled drinking water, electric fans, carpets and draperies, hot and cold running water in wash rooms at the rear, and removable service tables for each section.

In the driver's compartment there is an extra seat for the relief driver and porter. The linen supply provides for six complete changes for each berth. A smoking lounge for four persons is at the rear. The berths slide back opening the bus into a chair car for day travel.

The buses were designed and constructed by the Bender Body Co., Cleveland, and are mounted on Wills chassis made in Minneapolis.

The Great Lakes Stages is operating the buses. Paul Crawford is vice president and general manager of the Great Lakes Stages.

They Ride for 68c Per Gallon in Nairobi

WASHINGTON, April 19.—Gasoline prices in various countries of the world at the end of 1928 reflect the general lower trend over the past year, according to the Bureau of Foreign and Domestic Commerce.

The highest retail price of gasoline among 50 more important cities of the world was at Nairobi, British East Africa, where the price was 68 cents per gallon as of Dec. 31, 1928. This compares with a high price of 70 cents at the end of 1927 at Guatemala City, Central America, and 79 cents at the end of 1926 at Tananarive, Madagascar.

Other points where gasoline prices were high in 1928 were: La Paz, Bolivia, 60 cents; Johannesburg, British South Africa, 55 cents; Lourenco Marques, Mozambique, 55 cents; Tananarive, Madagascar, 49 cents; Funchal, Madeira, 48 cents; Tangier, Morocco, 45 cents; and Bluefields, Nicaragua, 43 cents.

The highest kerosene price reported in this compilation was at La Paz, Bolivia. It was 54 cents per gallon there. This compares with a price of 21.5 cents currently highest in the United States among the 150 cities quoted in NATIONAL PETROLEUM NEWS.

Other high kerosene prices at the end of 1928 included these points: Nairobi, B. E. A., 41 to 44.5 cents; Johannesburg, B. S. A., 41 to 43 cents; Tananarive, Madagascar, 41 to 44 cents; and Bluefields, Nicaragua, 41 cents.

The lowest kerosene prices were found in Palestine, price at Jerusalem being 8 cents, at Jaffa 12 cents and at Haifa 11 cents.

Lowest gasoline prices were at some Canadian points, and at Tallinn, Estonia, between 25 and 34 cents; at Bagdad, Iraq, 27 cents; Dublin, Ireland, 25.6 cents; Havana, 28 cents, and at Seoul, Chosen, 28 to 33 cents.

The bureau warns of using the above prices for comparative purposes without taking into consideration the various factors tending toward price inequalities such as source of supply, quantity consumed, transportation costs, import duties, excise taxes, distribution costs, and so on.

Foreign Opportunities

Reserved information may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, and its district and cooperative offices by duly registered firms and individuals upon written requests by opportunity number. The Bureau does not furnish credit ratings or assume responsibility as to the standing of foreign inquirers; the usual precautions should be taken in all cases, and where no references are offered it does not necessarily imply that satisfactory references could not be given. Correspondence may be in English unless otherwise stated.

37190.—**Gasoline and kerosene**, Lisbon, Portugal, purchase.

37191.—**Gasoline, kerosene, lubricating oils, white oils, petrolatum and paraffin wax**, Amsterdam, Netherlands, agency.

37192.—**Gasoline, crude oil, lubricating oils and greases**, St. Georges, Canada, purchase and agency.

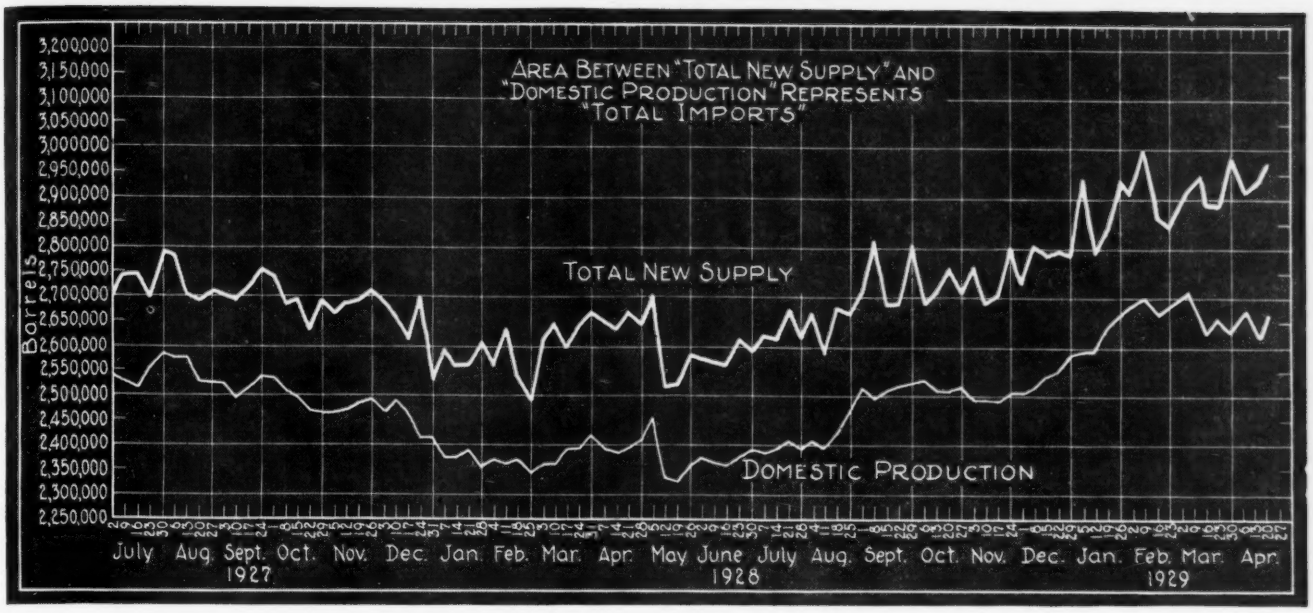
37193.—**Paraffin**, Liverpool, England, agency.

37194.—**Cylinder, motor and turbine oils**, Budapest, Hungary, purchase and agency.

37369.—**Gasoline, Kerosene, lubricating oils and greases**, Shawenegan Falls, Canada, purchase.

37370—**Cased gasoline**, Auckland, New Zealand, agency.

Daily Average Crude Oil Production and Imports



Daily average gross output of United States, by fields, for week ending with dates below as compiled by American Petroleum Institute

PRODUCTION SUMMARY

	April 20	April 13
Production east of Rockies	1,875,250	1,838,850
Increase		36,400
Total production in U. S.	2,671,850	2,615,050
Increase		56,800
Crude oil imports	304,000	315,286
Decrease		11,286
Total crude supply	2,975,850	2,930,336
Increase		45,514

OKLAHOMA

	April 20	April 13
Allen Dome	26,300	26,200
Blackwell	3,950	3,750
Bowlegs	34,950	33,000
Brama	3,400	3,250
Bristow-Slick	19,650	19,550
Burbank	21,200	21,300
Cromwell	7,900	7,600
Cushing	20,650	20,700
Davenport	1,500	1,500
Duncan District	6,450	6,550
Earlsboro	60,900	59,250
Fox	1,450	1,450
Garber	5,850	5,900
Braham	4,300	4,350
Healdton	13,100	13,000
Hewitt	8,150	8,150
Hubbard	2,000	2,050
Little River	73,800	70,450
Logan County	11,000	11,000
Maud	28,650	26,500
Mission	29,450	25,200
North Okmulgee	13,750	14,150
Oklahoma City	3,350	3,450
Osage (outside Burbank)	25,050	25,100
Papoose	3,350	3,400
Pearson	2,450	3,800
St. Louis	107,300	99,850
Scholem-Alechem	13,000	13,000
Searight	9,500	9,350
Seminole	34,100	31,550
South Okmulgee	8,000	8,100
Thomas	850	900
Tonkawa	10,350	10,100
Wewoka	4,850	4,900
Yale-Jennings	7,150	7,100
Others	45,950	42,850
Total, Oklahoma	673,600	648,300
Increase		25,300

KANSAS

Augusta-Fox Bush	2,950	2,750
Churchill	7,200	6,800
El Dorado-Towanda	12,800	11,900
Florence-Covert	1,000	950
Greenwood County	20,300	20,000
Oxford	5,250	4,950
Peabody-Elbing	2,750	2,850
Rainbow Bend	1,000	1,000
Russell	3,250	3,200
Sedgwick County	24,600	23,750
Others	28,000	27,200
Total, Kansas	109,100	105,350
Increase		3,750

NORTH LOUISIANA

Bellevue	700	700
Caddo, light	8,100	8,100
Caddo, heavy	3,150	3,250
Cotton Valley	3,050	3,050
De Soto and Red River	3,950	3,950
Elm Grove	600	600
Haynesville	5,350	5,400
Homer	4,050	3,950
Pleasant Hill	500	500
Urania	5,900	5,850
Others	250	250
Total, North Louisiana	35,600	35,600

ARKANSAS

Champagnolle	10,400	9,150
El Dorado	4,800	4,550
Lisbon	1,350	1,400
Nevada	1,200	1,250
Smackover, light	6,200	6,200
Smackover, heavy	48,450	49,150
Stephens	1,000	1,000
Others	100	100
Total, Arkansas	73,500	72,800
Increase		700

TEXAS (Outside Gulf Coast)

Panhandle District

	April 20	April 13
Carson County	6,500	6,300
Gray County	28,700	28,150
Hutchinson County	26,300	24,950
Wheeler County	650	650
Others	1,900	1,650
Total, Panhandle Texas	64,050	61,700
Increase		2,350

North Texas

Archer County	15,650	16,600
Burkburnett	9,050	8,950
Electra	12,800	12,650
Iowa Park and K. M. A.	5,150	5,450
Montague-Cooke	12,550	12,000
Wilbarger	26,650	26,750
Others	500	500
Total, North Texas	83,350	82,900
Increase		450

West Central Texas

	April 20	April 13
Brown County	8,550	8,700
Callahan County	3,900	3,750
Coleman County	3,600	3,700
Eastland-Desdemona	6,800	7,050
Jack County	1,600	1,500
Palo Pinto County	400	400
Shackelford County	18,300	13,250
Stephens County	6,300	6,100
Throckmorton County	6,050	600
Young County	6,700	6,750
Others	700	700
Total, West Central Texas	52,500	52,500

West Texas

	April 20	April 13
Crane and Upton Counties	48,850	49,000
Crockett County	2,150	2,100
Howard County	45,650	42,700
Jones County	5,850	6,100
Mitchell and Scurry Counties	2,600	2,800
Pecos County	92,200	88,200
Reagan County	19,150	18,500
Winkler County	139,000	143,200
Others	2,050	1,800
Total, West Texas	357,500	354,400
Increase		3,100

East Central Texas

Boggy Creek	2,900	3,500
Corsicana-Powell	8,100	8,150
Currie	500	500
Mexia	5,400	5,450
Nigger Creek	600	600
Richland	400	400
Wortham	1,150	1,200
Total, East Central Texas	19,500	19,800
Decrease		300

Southwest Texas

Dale	550	550
Laredo District	11,550	11,750
Luling	12,300	12,450
Lytton Springs	1,000	1,000
Salt Flat	41,400	41,800
Somerset	1,100	1,000
Others	4,950	4,850
Total, Southwest Texas	72,850	73,400
Decrease		550
Total, Texas (Outside Gulf Coast)	649,300	644,700
Increase		4,600

GULF COAST

Coastal Texas

	April 20	April 13
Barbers Hill	10,150	11,700
Batson	1,500	1,500
Big Creek	2,950	2,750
Blue Ridge	3,300	3,200
Boling	2,000	1,900
Damon Mound	700	800
Goose Creek	6,200	6,300
Hull	9,300	9,450
Humble	7,000	7,400
Orange County	2,800	2,900
Pierce Junction	15,850	15,700
Raccoon Bend	2,550	2,200
Saratoga	1,000	950
Somerville	3,250	3,650
Sour Lake	2,700	2,650
South Liberty	5,550	5,700
Spindletop	31,650	32,000
Sugarland	11,600	12,100
West Columbia	6,000	6,250
Others	5,100	5,000
Total, Coastal Texas	131,150	134,100
Decrease		2,950

Coastal Louisiana

East Hackberry	3,800	2,600
Edgerly	800	900
Evangeline	800	1,000
Lockport	3,400	3,400
Old Hackberry	3,600	4,100
Sorrento Dome	350	400
Sulfur Dome	2,400	2,600
Sweet Lake	400	400
Vinton	4,000	4,200
Others	750	800
Total, Coastal Louisiana	19,300	20,400
Total Gulf Coast	150,450	154,500
Decrease		4,050

ROCKY MOUNTAIN

Wyoming

	April 20	April 13
Big Muddy	2,300	2,300
Elk Basin	850	1,000
Grass Creek	2,300	2,300
Labarge	1,750	1,750
Lance Creek	250	250
Lost Soldier	3,300	3,300
Oregon Basin	2,350	2,350
Rock Creek	550	2,450
Salt Creek	35,350	30,100
Others	2,650	2,600
Total, Wyoming	53,650	48,400
Increase		5,250

Montana

Cat Creek	1,400	1,400
Pondera	2,750	2,850
Sunburst	5,300	5,300
Others	100	100
Total, Montana	9,550	9,650
Decrease		100

Colorado

Florence	1,050	1,050
Fort Collins	3,550	2,350
Moffat (Craig)	1,000	1,000
Others	1,800	2,100
Total, Colorado	6,400	6,500
Decrease		100

New Mexico

Artesia	900	900
Hogback	250	300
Rattlesnake	1,350	750
Table Mesa	450	200
Others	400	400
Total, New Mexico	3,350	2,550
Increase		1,100
Total, Rocky Mountain	72,950	67,100
Increase		5,850

CALIFORNIA

Dominguez	10,500	10,500
Elwood-Goleta	31,500	28,000
Huntington Beach	46,500	46,500
Inglewood	25,500	25,500
Kettleman Hills	3,500	4,000
Long Beach	189,500	185,000
Midway-Sunset	72,500	72,500
Rosecrans	7,000	7,000
Santa Fe Springs	160,000	147,000
Seal Beach	48,500	48,500
Torrance	14,500	14,500
Ventura Avenue	56,500	55,000
Others	130,600	132,200
Total, California	796,600	776,200
Increase		20,400

EASTERN

(Including Ill., Ind., Ky., O., W. Va., Pa., and N. Y.)	110,750	110,500
Increase		200

Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

Mid-Continent Refinery Operations Week Ended April 19 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	West Texas	North La.-Ark.	Total Week Ended April 19
Plants Reporting	12	29	25	13	12	91
Da. Av. Cap. (Bbls.)	92,000	160,200	86,600	76,500	54,900	470,200
Da. Cracking Capacity	30,700	52,600	17,200	.....	22,700	123,200
Da. Av. Crude Runs	69,023 — 2.6	108,095 — 5.3	62,610 + 3.5	55,338 + 4.5	63,682	358,748 — 0.8
Da. Av. Other Oils	6,885 — 20.3	4,383 — 5.7	2,410 — 49.1	30 — 46.4	3,523	17,231 + 11.7
GASOLINE—Gallons						
Stocks, April 12	30,960,000	73,093,000	21,854,000	7,586,000	7,518,000	141,011,000
Prod. 4-12 to 4-19	9,598,000 — 3.8	17,846,000 — 3.4	7,634,000 + 1.9	4,169,000 + 2.9	5,773,000	45,020,000 + 2.9
Ship. 4-12 to 4-19	9,188,000 — 5.4	17,074,000 — 6.1	7,800,000 + 2.2	4,202,000 + 13.1	4,963,000	43,227,000 —11.9
Stocks, April 19	31,370,000 + 1.3	73,865,000 + 1.1	21,688,000 — 0.8	7,553,000 — 0.4	8,328,000	142,804,000 +10.8
Ratio Sales to Prod.	95.7%	95.7%	102.2%	100.8%	86.0%	96.0%
KEROSENE—Gallons						
Stocks, April 12	5,152,000	6,768,000	2,137,000	74,000	624,000	14,755,000
Prod. 4-12 to 4-19	2,509,000 — 7.8	2,080,000 — 18.0	1,536,000 — 1.2	35,000 +340.0	218,000	6,378,000 + 36.3
Ship. 4-12 to 4-19	1,707,000 — 16.5	1,632,000 — 19.2	1,115,000 — 5.7	26,000 +136.4	325,000	4,805,000 + 16.1
Stocks, April 19	5,954,000 + 15.6	7,216,000 + 6.6	2,558,000 + 19.7	83,000 + 12.2	517,000	16,328,000 — 17.1
Ratio Sales to Prod.	68.0%	78.5%	72.6%	74.3%	148.1%	75.3%
STOVE DISTILLATE—Gallons						
Stocks, April 12	966,000	2,981,000	535,000	263,000	70,000	4,815,000
Prod. 4-12 to 4-19	187,000 — 13.8	296,000 — 23.7	181,000 + 33.1	132,000 + 30.7	118,000	914,000 + 43.9
Ship. 4-12 to 4-19	84,000 — 43.6	207,000 — 30.5	79,000 — 28.2	84,000 + 12.0	118,000	572,000 + 28.3
Stocks, April 19	1,069,000 + 10.7	3,070,000 + 3.0	637,000 + 19.1	311,000 + 18.3	70,000	5,157,000
Ratio Sales to Prod.	44.9%	69.9%	43.6%	63.6%	100.0%	62.6%
GAS OIL—Gallons						
Stocks, April 12	7,253,000	15,390,000	6,311,000	15,498,000	5,740,000	50,192,000
Prod. 4-12 to 4-19	2,161,000 — 5.0	2,040,000 + 9.4	900,000 + 41.1	2,388,000 + 21.0	2,433,000	9,922,000 + 10.3
Ship. 4-12 to 4-19	2,054,000 — 5.2	1,631,000 +125.6	748,000 + 57.5	1,780,000 + 6.73	1,685,000	7,898,000 + 36.0
Stocks, April 19	7,360,000 + 1.5	15,799,000 + 2.7	6,463,000 + 2.4	16,106,000 + 3.9	6,488,000	52,216,000 + 13.0
Ratio Sales to Prod.	95.0%	80.0%	83.1%	74.5%	69.3%	79.6%
FUEL OIL—Gallons						
Stocks, April 12	11,615,000	44,361,000	39,363,000	34,106,000	23,906,000	153,351,000
Prod. 4-12 to 4-19	5,826,000 + 0.3	7,203,000 — 3.6	7,513,000 — 0.5	7,984,000 + 0.8	9,280,000	37,806,000 + 1.1
Ship. 4-12 to 4-19	5,233,000 — 2.1	1,942,000 — 50.9	5,888,000 — 1.0	8,462,000 — 23.7	8,125,000	29,650,000 —11.2
Stocks, April 19	12,208,000 + 5.1	49,622,000 + 11.9	40,988,000 + 4.1	33,628,000 — 1.4	25,061,000	161,507,000 + 4.8
Ratio Sales to Prod.	89.8%	27.0%	78.4%	106.0%	87.6%	78.4%

Gasoline Produced by Various Methods, Week Ended April 19

	Kansas	% of Total	Oklahoma	% of Total	North & Cent. Texas	% of Total	West Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	6,478,000	67.5	12,101,000	67.8	5,474,000	71.7	3,994,000	95.8	2,608,000	45.2	30,655,000	68.1
Cracked	2,858,000	29.8	4,832,000	27.1	1,792,000	23.5	.....	....	2,660,000	46.1	12,142,000	27.0
Natural	262,000	2.7	913,000	5.1	368,000	4.8	175,000	4.2	505,000	8.7	2,223,000	4.9
Total	9,598,000		17,846,000		7,634,000		4,169,000		5,773,000		45,020,000	

+ or — columns are % changed over previous week.

Crude Runs Curtailed; Gasoline Stocks Rise

Staff Special—By Telegraph
TULSA, April 23

CRUDE oil runs at 91 Mid-Continent refineries that report their operating statistics to NATIONAL PETROLEUM NEWS, were 358,748 barrels daily average in the week ended April 19. The runs were approximately 4000 barrels daily average less than runs in the preceding week. Charges of other oils to stills were 4000 barrels or 18.9 per cent less.

Crude runs at North Central Texas and West Texas refineries were increased 4500 barrels daily average over the preceding week's runs. Kansas decreased runs 1,900 barrels, Oklahoma 6,100 barrels, and North Louisiana-Arkansas 500 barrels.

With the exception of the North Louisiana-Arkansas district each district decreased charges of other oils to stills.

Gasoline production was reduced

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended April 19. Change in stocks figured from March 22.

GASOLINE

	Gallons
Production	179,696,000
Shipments	177,344,000
Net change in stocks	2,352,000
Ratio sales to production	98.7%

KEROSENE

Production	25,970,000
Shipments	22,803,000
Net change in stocks	3,167,000
Ratio sales to production	87.8%

STOVE DISTILLATE

Production	5,044,000
Shipments	3,465,000
Net change in stocks	1,579,000
Ratio sales to production	68.7%

GAS OIL

Production	35,525,000
Shipments	26,420,000
Net change in stocks	9,105,000
Ratio sales to production	74.4%

FUEL OIL

Production	145,897,000
Shipments	132,750,000
Net change in stocks	13,147,000
Ratio sales to production	91.0%

1.3 per cent from the preceding week's production or 600,000 gallons. The districts of Kansas and Oklahoma decreased gasoline output 380,000 and 640,000 gallons, respectively, while increases totaling 420,000 gallons were reported by refineries in North Central and West Texas, and North Louisiana-Arkansas.

Gasoline shipments decreased 1,640,000 gallons or 3.7 per cent. Shipments from North Central and West Texas increased 660,000 gallons. Shipments from Kansas, Oklahoma, and North Louisiana-Arkansas decreased 2,300,000 gallons.

Stocks of gasoline April 19 were 1,800,000 gallons larger than stocks April 12. The two Texas districts reduced stocks 200,000 gallons but 2,000,000 gallons was added to stocks by refineries in the other districts. The 142,804,000 gallons of gasoline on hand April 19 was equal to 23 days' supply compared with 22 days' supply one week before, using daily average shipments in the weeks preceding those dates as meters.

Kerosene output decreased 8.6 per cent while shipments decreased 13.3 per cent, resulting in an increase to stocks of 1,600,000 gallons. Kansas refiners had the largest increase in stocks, 800,000 gallons.

Stove distillate production amounted to 342,000 gallons more than the volume shipped from refineries.

Gas oil production increased approximately 1,000,000 gallons or 10.8 per cent. With the exception of the Kansas district where a slight decrease in output was recorded all districts showed a larger gas oil output. Shipments of gas oil were 2,200,000 gallons more than in the preceding week but 2,000,000 gallons less than the amount produced.

Fuel oil production decreased but shipments fell off materially, resulting in an increase of more than 8,000,000 gallons in stocks. In Oklahoma approximately 5,000,000 gallons of fuel went into storage.

During the four-week period ended April 19 production of each of the products exceeded shipments from refineries. Gasoline production and shipments were nearly equal while stove distillate shipments were only 68.7 per cent of the amount produced.

BUFFALO, April 19.—W. G. Weimert, for many years with Elmer E. Harris & Co., and Charles M. Anderson, have organized the Weimert-Anderson Oil Corp. here, to distribute lube oils, greases, and other petroleum products. Mr. Weimert is president and Mr. Anderson vice-president. Both men have been in the oil business about 20 years.

Other officers of the company are: Walter J. Maischoss, East Aurora, treasurer, and John Moore, secretary.

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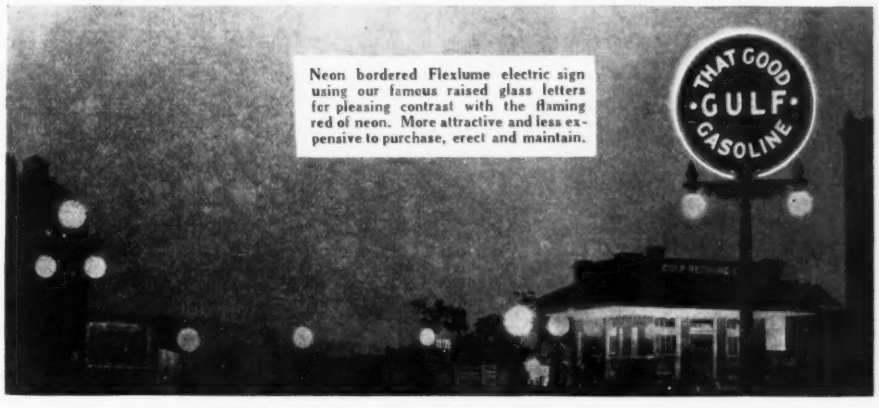
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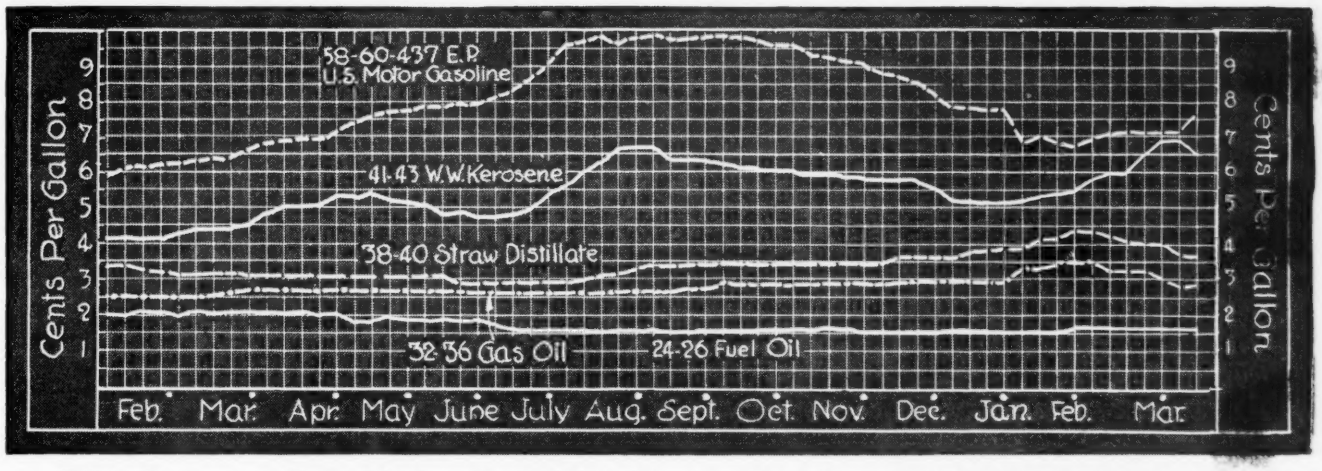
Refinery - Tank Wagon Markets

National Petroleum News

Current Prices of Principal Mid-Continent Refined Products


58-60-437 E.P. U.S. Motor Gasoline
41-43 W.W. Kerosene
38-40 Straw Distillate
32-36 Gas Oil
24-26 Fuel Oil
Cents Per Gallon
Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

Prices shown are on Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue

Foreign Buyer Enters Mid-Continent Market Direct for Gasoline

Staff Special
TULSA, April 20

EXPORT buying was active in the Mid-Continent gasoline markets the past week. Approximately 750,000 gallons of 64-66, 375 e. p. gasoline was bought by an export company from North Texas refiners. Another purchase was reported made by a Tulsa buyer of approximately a million gallons of 61-63, 390 e. p. grade. Quotations on 58-60 U. S. motor gasoline were 0.125 to 0.25 cent higher.

Natural gasolines were generally quiet. Aside from a slight advance in Grades A and AA prices, there was no change throughout the week.

Kerosenes were in light demand in most quarters. Oklahoma, Kansas and North Texas refiners were lower in their prices, while goods were more freely offered in other districts at unchanged prices.

Demand was lighter for stove distillates and gas oils. Fuel oils were steady in demand and only minor price changes noted.

Neutral oils and cylinder stocks still remained in good demand. Prices on some grades were 0.50 to 1 cent higher. Wax was generally out of the market as far as sales were concerned.

Gasolines

Buying of gasoline for export increased somewhat the past week. An export company between April 13 and 16 bought approximately 750,000 gallons of 64-66, 375 e. p. gasoline from north Texas refiners at a price reported to have been 7.75 cents a gallon.

Between April 13 and 15 a Tulsa commission broker bought approximately a million gallons of 61-63, 390 e. p. gasoline for immediate shipment to a Gulf terminal for early loading. The broker bought for the account of a foreign oil company. This is the second part-cargo the broker has handled in this manner.

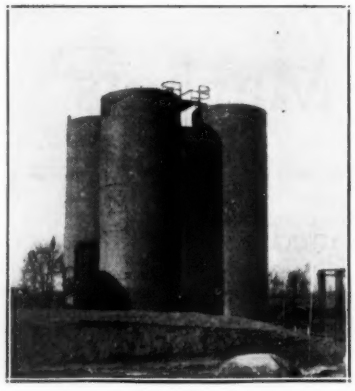
These purchases may be more significant than surface appearances would indicate. It is probably the first time a foreign distributor of petroleum has come directly into the Mid-Continent and bought the gasoline f.o.b. refinery.

The buyer will pay the freight to a Gulf terminal which has been leased to handle the gasoline, and will also pay all handling charges. The custom heretofore has been for the foreign distributor to buy through some export company.

The new plan of buying is generally understood to have been the outgrowth of the formation of the Export Petroleum Association, Inc. which eliminated considerable competitive bidding for export business.

How successful the plan will be remains to be seen. The broker has made it definitely known that he has been working strictly on a commission basis. The money for the gasoline has been deposited with a Tulsa bank and the refiners from whom he has bought the gasoline have been able to obtain payment as the gasoline was shipped.

Domestic demand for gasolines was good throughout the week. A majority of Oklahoma refiners sent out quotations April 15 at 7.50 cents a gallon for 58-60 U. S. Motor and this price was fairly well established by the middle of the week. Only a very few of the smaller refiners in Oklahoma accepted any business below 7.375 cents a gallon.



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West Texas refiners continued to report they were well sold up and probably would have little if any gasoline to offer on the spot market for another two weeks or more. North Texas refiners also were in reasonably good shape.

Kansas, Louisiana and Arkansas refiners reported their business was fair. Prices advanced in line with the new levels established in Oklahoma.

Lower gravity gasolines were in slightly better demand, the few Oklahoma refiners making them reported. Prices were advanced April 15 in line with the advance on the U. S. Motor grade.

Kerosenes

Demand for kerosenes slowed up in most quarters, noticeably in north Texas district. Refiners who had been buying on the outside showed less interest and the jobbing trade bought more on a hand to mouth basis. Prices in Oklahoma and north Texas lost some ground while the goods in Louisiana and Arkansas were more freely offered at unchanged price levels.

Kansas refiners reported a fair demand for the better grades of kerosene for incubator use, but kerosenes for tractor use were not in as good demand as had been the case prior to the middle of the month, and 41-43 w.w. grade was lower in price by the end of the week.

Exporters continued to show no interest in kerosenes in any of the Mid-Continent districts.

Gas Oils and Distillates

Gas oil prices lost some ground with demand lighter in all areas. The price range for 32-36 U. G. I. specification gas oil was 2.50 to 2.75 cents a gallon. Zero cold test gas oil moved at 2.75 to 3 cents a gallon, but demand was lighter for this grade.

The Petroleum Oils Corp. of Kansas City has contracted for 3000 cars of 30-32 gas oil from the Pecos Valley Refining Co., Pyote, Tex., the goods to be taken out at the rate of 250 cars a month. The gas oil, according to the buyer's Tulsa representative, will be shipped to northern markets.

Distillate demand was exceedingly light and refiners who made this commodity for the winter season have curtailed production considerably the past two or three weeks.

Fuel Oils

Fuel oil prices showed only minor fluctuations. Demand was steady with inquiries in the market for some goods for May shipment. Prices quoted apparently were in line with the spot market, and refiners were inclined to believe the present prices were bottom.

A buyer early in the week sought a quantity of 24-26 fuel oil and found very little of this grade being made for spot market trade at the present time. It was not so many years ago that this grade was the standard for Oklahoma. Refiners for the most part now are running their fuel oils down as far as possible and the prevailing grades now are 18-22 and 16-18 gravities.

Neutral Oils, Cylinder Stocks

Price ranges narrowed on several grades of neutral oils the past week and the bulk of other grades were sold at the top figures. Oklahoma manufacturers reported a good demand and that they expected still better prices by the end of the month.

Bright stock continued in steady demand. Other Oklahoma refiners have advanced their quotations on 150-160 vis. 210 grade to 32 cents and by the end of the week no sales or quotations were reported under that price.

More refiners reported that they were out of the wax market and wax was out of the picture as far as sales were concerned in Oklahoma. Quotations were at unchanged prices.

Natural Gasolines

The market on natural gasolines was generally quiet most of the week. Buying was in small lots but sufficient in total volume to keep production moving without any distress goods appearing.

Manufacturers anticipated some new buying early next week from sellers who might not be completely covered on their requirements to fill contracts before the first of the month.

Grades B and BB were scarce for prompt delivery by the end of the week. One marketer reported that he was behind on orders, while a major manufacturer said that he had turned down some orders for lack of goods.

An export order was placed April 18. This was a purchase of twenty-five cars of grade AA for immediate shipment at a price of 8 cents. Otherwise, export buying was quiet.

Aside from 0.25 cent advance in grades A and AA, prices on all grades remained unchanged throughout the week. And at close of business Saturday, April 20, grades A and AA were moved at 8 cents, with B and BB grades firm at 7.75 cents, while grade C was quoted at 7.50 cents.

Chicago Resale Market

Gasolines Continue Advancing

Staff Special
CHICAGO, April 20

THE Chicago resale market passed a comparatively quiet week. Gasolines continued their steady price advance while other commodities were showing little signs of life.

Most of the trade enjoyed a good spot demand for U. S. Motor gasoline during the first half of the week, while inclement weather during the closing days slowed things down considerably. A number of refiners reported their contract jobbers were taking out close to their maximum allowances.

U. S. Motor gasoline continued its gradual upward price climb and nearly all sellers expressed optimism concerning further advances. The major Oklahoma refiners advanced their U. S. Motor price another .125 cent on April 15, bringing it up to 7.50 cents. This advance was followed by a like advance in the low range of the market.

Sales of Oklahoma U. S. Motor were mostly at 7.375 to 7.50 cents on April 15, although scattered cars were available at 7.25 cents. The bulk of sales over the remainder of the week were at 7.375 to 7.50 cents, although on April 19 and 20 the majority of sellers were quoting the latter figure.

Several carlot marketers reported they were having to pay 7.375 cents for Oklahoma U. S. Motor gasoline for prompt shipment. Early in the week one refiner reported moving several cars of U. S. Motor at 7.375 cents to a marketer for shipment over rest of April.

Sales of West Texas U. S. Motor gasoline also were at higher prices toward the close of the week. The bulk of sales on April 15 and 16 were at 7.25 to 7.375 cents, Group 3 basis. While some goods still was available at 7.25 cents on April 17, the bulk of movement was at 7.375 cents. Several sellers reported moving West Texas Motor at 7.50 cents, Group 3 basis.

The higher gravity gasolines were maintaining their price differential over U. S. Motor but demand for these grades was only fair. The 60-62, 437 e. p. opened April 15 at 7.375 to 7.625 cents and moved thereafter at 7.50 to 7.625 cents. Gasoline of 60-62, 400 e. p. grade was generally unchanged at 7.625 to 7.75 cents and the 64-66, 375 e. p. sold mostly at 8 to 8.125 cents.

Spot demand for kerosene was light this week and prices were off approximately .125 cent. Reports from over the middle west indicate that in many sections the spring farming demand for kerosene was just getting a good start but that the majority of jobbers had their kerosene storage full and would probably not be in the market very heavily until the fall season.

For the first time since the middle of February, when the bullish movement started, the OILGRAM'S price range on 41-43 w.w. kerosene was lowered. The bulk of sales on April 15 and 16 continued at 6.625 to 6.75 cents, which represented the top of the price advance as shown by the OILGRAM, and were at 6.50 to 6.75 cents up to April 20. As the week closed a number of sellers, who had been quoting 6.75 cents, reduced their price to 6.50 cents. Sales were reported April 20 at 6.375 cents but the bulk of goods moved at 6.50 to 6.625 cents.

All grades of furnace oils were practically lifeless throughout the week with only occasional small orders reported. Prices of most grades were holding fairly steady, however, although they were gradually working lower. The 38-40 straw distillate moved throughout the week at 3.75 to 3.875 cents.

Gas oils were generally quiet although prices of nearly all grades were generally unchanged. Demand for industrial gas oil was fair in some quarters. Ordinary 32-36 dark gas oil moved throughout the week at 2.50 to 2.75 cents. The 32-36 dark zero grade sold mostly at 2.75 to 3 cents and the 32-36 straw zero continued to move mostly at 2.875 to 3 cents.

The demand for nearly all grades of fuel oils was light but price ranges were generally unchanged over those prevailing at the close of last week. The heavier grades of fuel with a low sulfur content were getting the better play. For prices on all fuels see NATIONAL PETROLEUM NEWS, issue of April 17.

Several precipitation periods are likely in the Standard of Indiana territory next week, while temperatures will hold close to the seasonal normal.

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Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, F. O. B. refinery except where $ is shown

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

Weighted Average Prices

OKLAHOMA (Weighted Average Prices)

	Prices April 22	Prices April 15	Prices April 8
58-60 U.S. Motor, 437 e.p.	7.5125	7.4290	7.3352
60-62 437 e.p. gasoline...	7.7000	7.6364	7.5972
60-62 400 e.p. gasoline...	7.8750	7.8750	7.5313
64-66 375 e.p. gasoline...	8.5000	8.4167	8.2500

All above weighted average prices are effective on Monday on the dates shown at the top of the columns.

Several major Oklahoma refiners advanced quotations on 58-60 U. S. Motor April 15, to 7.50 cents a gallon and by the end of the week the bulk of daily sales reported were at that figure. The above weighted average price will show that some sales were made above the 7.50 cent price. Only one or two cars were reported under 7.375 cents April 20.

There was an increased demand for export gasoline, while the domestic demand continued good.

KANSAS (Weighted Average Price)

	Prices April 22	Prices April 15	Prices April 8
58-60 U.S.Motor 437 e.p.	7.7813	7.7500	7.5515

Kansas refiners reported that business was only fair. The sales of 58-60 U. S. Motor by the different reporting refiners were generally at the same price level. Prices advanced accordingly with prices in Oklahoma.

(The Oklahoma weighted average prices above are made up from confidential daily reports on all gasoline spot market sales —for shipment in 10 days—from Oklahoma refineries representing 91.8 per cent of the state's refining capacity. The Kansas weighted average prices above are made up from confidential daily reports of all gasoline spot market sales from Kansas refineries representing 58 per cent of the state's operating capacity. The above prices do not include prices on sales for "over the month," for contracts, or to brokers on shipments to company owned stations. Records of the reporting refiners are checked periodically to verify the accuracy of their reports.—Editor)

OKLAHOMA	Prices April 22	Prices April 15	Prices April 8
48-50 450 e.p. naphtha...	†7.00 – 7.25	†6.875– 7.125	†6.75 – 6.875
50-52 450 e.p. naphtha...	†7.00 – 7.25	†6.875– 7.125	†6.75 – 6.875
56-58 450 e.p. gasoline...	7.125– 7.25	7.125– 7.25	7.00 – 7.125
58-60 450 e.p. gasoline...	7.25	7.125– 7.25	7.125– 7.25
64-66 390 e.p. gasoline...	7.875– 8.00	7.875– 8.00	7.875– 8.00
68-70 350-360 e.p. gasoline	8.625– 8.75	8.50	8.50
PENNSYLVANIA			
52-54 Naphtha.....	8.50 – 9.00	8.50 – 9.00	8.25 – 8.75
54-56 Naphtha.....	8.75 – 9.50	8.75 – 9.50	8.25 – 9.00
58-60 U.S. Motor 437 e.p.	9.00 – 9.75	9.25 – 9.50	9.00
60-62 400-410 e.p. gasoline	9.50 –10.25	9.50 –10.25	9.00 –10.00
64-66 390 e.p. gasoline...	10.25 –11.00	10.00 –10.50	9.50 –10.25
68-70 Str-run gas 350-360 e.p.....	11.25 –12.00	10.75 –11.50	10.50 –11.50

‡Price of Saturday, March 30.

OHIO (Quotations of S. O. Ohio. 3c state tax to be added.)

U. S. Motor Gasoline

Cincinnati.....	10.75	10.25	9.75
Cleveland, Toledo, Lima.	10.75	‡10.25	10.00
Elsewhere in Ohio.....	11.25	10.50	10.25

‡Within switching area of refinery. On April 15, prices at Dayton and Columbus are included in "Elsewhere in Ohio".

"Shipping limits" are defined as areas where freight rates from company's shipping points, Cleveland, Toledo and Lima, are the same as to cities mentioned.

†Prices nominal ††Only one refiner quoting *Quotations only

KANSAS (F. O. B. refinery Kansas destination)

	Prices April 22	Prices April 15	Prices April 8
60-62 437 e.p. gasoline...	7.50 – 7.75	7.50 – 7.75	.....
60-62 400 e.p. gasoline...	8.00 – 8.125	7.875– 8.125	7.875– 8.125
64-66 375 e.p. gasoline...	8.50 – 8.625	8.50 – 8.625	8.375– 8.50
NORTH TEXAS			
48-52 450 e.p. naphtha...	†7.00	†7.00	†6.25 - 6.50
56-58 450 e.p. gasoline...	7.00	.....	.....
58-60 450 e.p. gasoline...	7.00	7.00	6.50 – 6.75
58-60 U.S. Motor 437 e.p.	7.25 – 7.50	7.00 – 7.25	7.00
60-62 400 e.p. gasoline...	7.50	7.25 – 7.50	7.25 – 7.50
64-66 390 e.p. gasoline...	7.625– 7.75	7.75	7.625– 7.75
64-66 375 e.p. gasoline...	7.875	7.875– 8.00	7.875– 8.00
68-70 350-360 e.p. gasoline	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50

****WEST TEXAS (F.o.b. West Texas refinery, for unrestricted shipment)**

50-52 naphtha.....	6.75	6.75	6.75
56-58, 437 e.p. gasoline..	7.00	7.00	7.00
58-60, 437 e.p. gasoline...	7.25 – 7.375	7.125– 7.25	7.125– 7.25

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

58-60 U.S. Motor gasoline	7.75	7.75	7.75

Comparative Prices of 58-60 U. S. Motor Gasoline, Group 3 and Point of Origin, to Jobbers Only, in Effect April 22

	Price F.O.B Group 3	Price F.O.B. Point of Origin	If for Particular Destination
Oklahoma	7.5125 (Wt. Avg.)	7.5125 (Wt. Avg.)	..... S. O. Neb. & Ind. Territories, etc.
Kansas	7.375-7.50	.....	
Kansas	.....	7.7813 (Wt. Avg.)	Kansas only.
North Texas	7.375-7.50	7.25-7.50	.....
West Texas	7.25-7.375	7.25-7.375	.....
Louisiana-Ark.	7.375	.....	Mich., Ohio & Indiana.
Louisiana-Ark.	.....	7.75	State or differential haul.
Idiana-Illinois ..	7.50	.....*	S. O. Ind. territory except Detroit and vicinity. For Ohio on delivered basis only.

*Shipments made from E. Chicago, Ind., and Wood River, Ill., according to conditions and freight rates; no prices F.O.B. point of origin can be given.

Note—The above comparative price basis given for the convenience of the trade. We have endeavored for the past several years to cause the trade to appreciate the difference between prices quoted f.o.b. Group 3 where the product originates and as shipped from a refinery district outside of Oklahoma. As the trade still persists in basing prices on products to be shipped from points outside of Oklahoma, Group 3, we give the above table for its convenience.

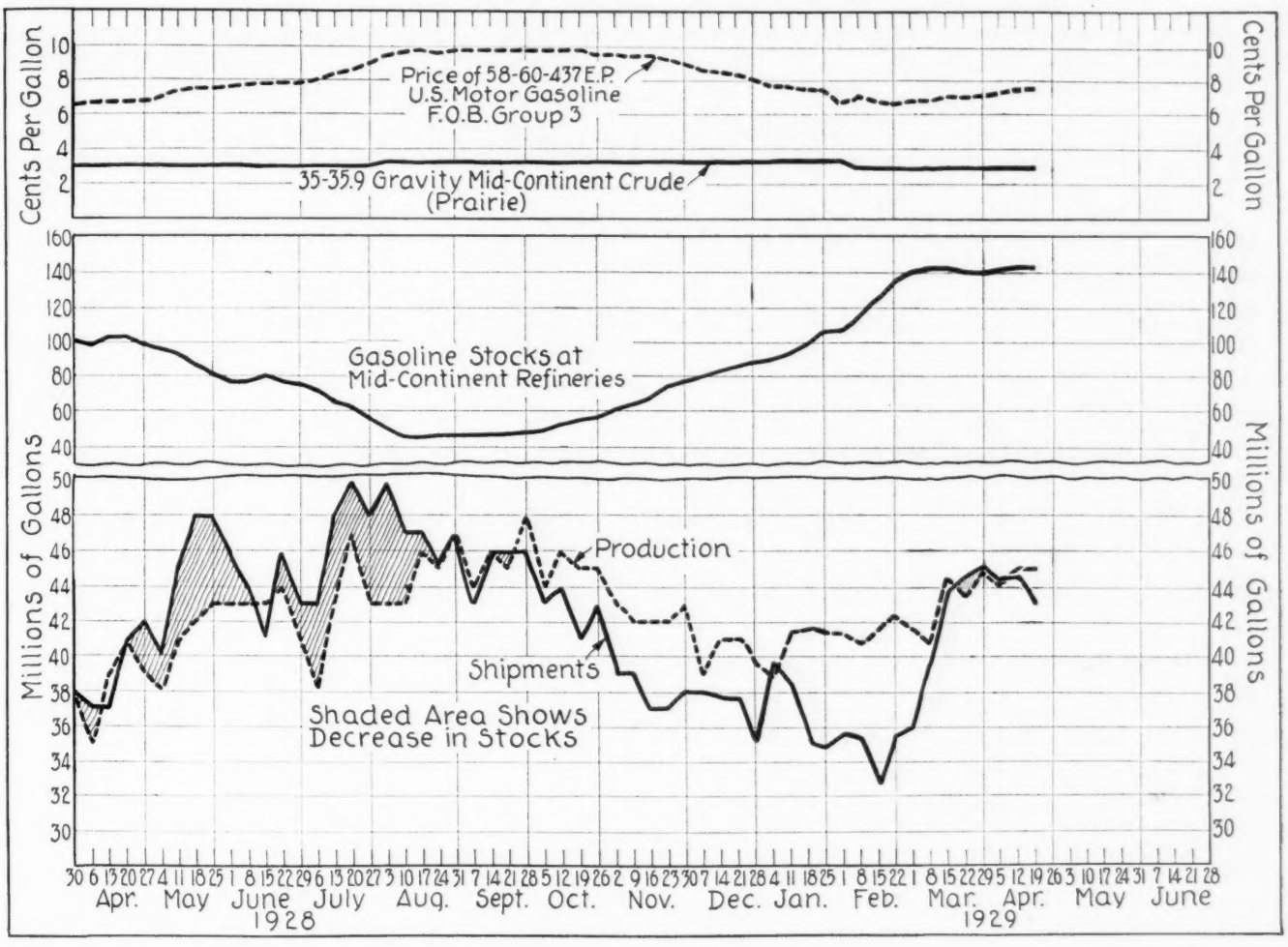
However, in giving the above prices, please note particularly not only the point of origin, but the destination of the shipments. Prices, especially from those districts outside of Group 3 Oklahoma, vary quite materially according to the marketing district into which the gasoline is to be shipped. The prices that we give in the above table are for the best known marketing districts to which these refiners ship but, owing to the wide variation in freight rates and marketing conditions in the various districts, we do not guarantee any of the above prices.

(Continued on Page 130)

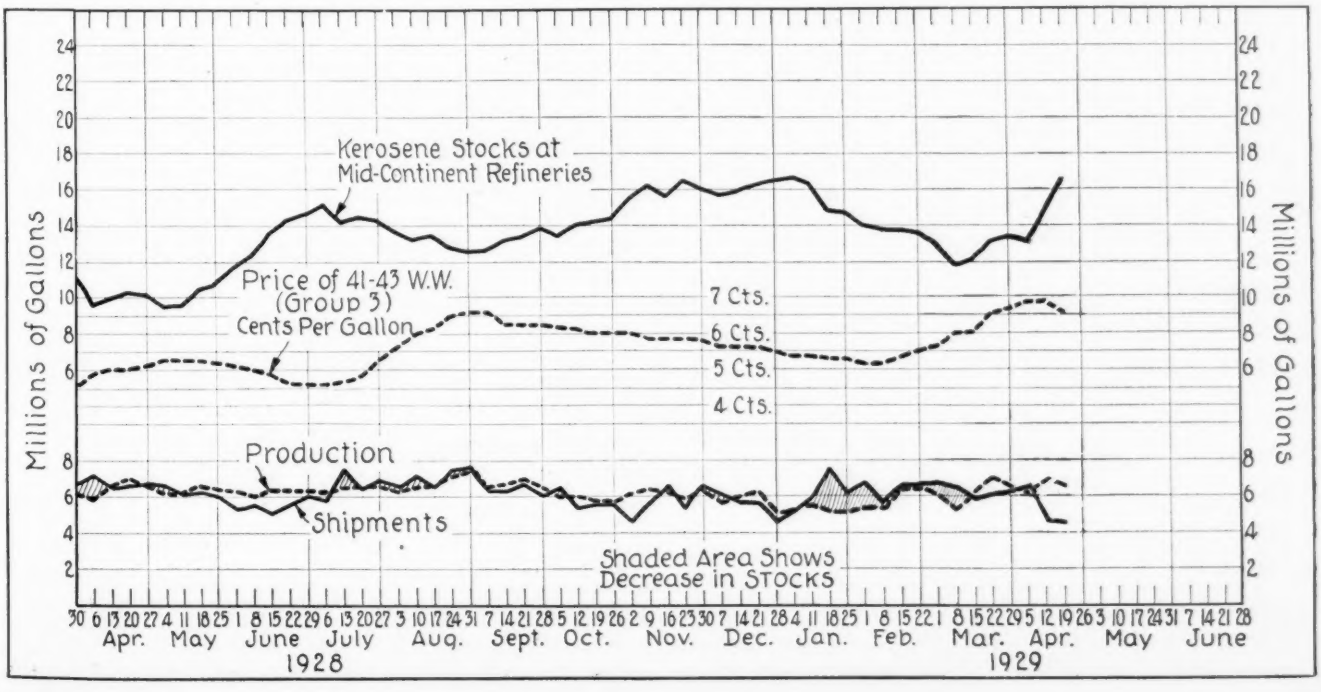
****Represents Both Sales and Quotations.**

Barometer of Mid-Continent Refinery Market—Week Ending April 19

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 91 Plants to National Petroleum News


Cents Per Gallon
Price of 58-60-437 E.P. U.S. Motor Gasoline F.O.B. Group 3
35-35.9 Gravity Mid-Continent Crude (Prairie)
Gasoline Stocks at Mid-Continent Refineries
Millions of Gallons
Production
Shipments
Shaded Area Shows Decrease in Stocks
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June
1928
1929

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 122



Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, F. O. B. refinery except where $ is shown

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

ARKANSAS (Arkansas destination only)

	Prices April 22	Prices April 15	Prices April 8
58-60 450 e.p. gasoline...	7.50	7.50	7.50
58-60 U.S. Motor 437 e.p.	7.75	7.75	7.75
61-63 390 e.p. gasoline...	8.25	8.00 – 8.25	7.75 – 8.00

‡CALIFORNIA

54-58 U.S. Motor 437 e.p.	7.50 –10.50	7.50 – 9.50	7.50 – 8.50
58-61 375-400 e.p. gasoline	8.50 –11.50	8.50 –10.50	8.50 – 9.50
42-45 Eng. dis. 445-480 e.p.	8.00 – 9.00	7.50 – 8.50	8.50 – 9.00

‡3c tax to be added to California gasoline prices if used in state.

NATURAL GASOLINE

(Note: End point of all grades, not over 375 F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA

Grade AA, 80-87.9, 90% Recovery	7.875	8.00	8.00
Grade A, 72-79.9, 90% Recovery	7.875	8.00	8.00
Grade BB, 84-92, 85% Recovery	7.75	7.75	*7.50
Grade B, 76-83.9, 85% Recovery	7.75	7.75	*7.50
Grade C, 80-92, 78% Recovery	7.50	7.50	*7.25

NORTH TEXAS (F. O. B. Breckenridge)

Grade AA, 80-87.9, 90% Recovery	8.00	8.00	8.00
Grade A, 72-79.9, 90% Recovery	8.00	8.00	8.00
Grade BB, 84-92, 85% Recovery	7.75	7.75	*7.50
Grade B, 76-83.9, 85% Recovery	7.75	7.75	*7.50
Grade C, 80-92, 78% Recovery	7.50	7.50	*7.25

NORTH LOUISIANA (F. O. B. Monroe District)

Grade AA	†8.125	†8.125	†8.125
Grade BB	†7.875	†7.875	†7.625
Grade C	†7.625	†7.625	†7.00

CALIFORNIA

75-85, 375-390 e.p. blend	7.75 – 8.75	7.75 – 8.75	7.25 – 8.25

MOTOR FUEL BLENDS

OKLAHOMA

64-66 Blend 437 e.p.	††7.50	7.125– 7.25	7.125– 7.25

BURNING OILS

PENNSYLVANIA

45 w.w. kerosene	7.50 – 7.75	7.50 – 7.75	7.50 – 7.625
46 w.w. kerosene	7.75 – 8.00	7.75 – 8.00	7.875– 8.00
47 w.w. kerosene	8.50 – 8.75	8.50 – 8.75	8.25 – 8.50
300 mineral seal	7.50 – 8.00	7.50 – 8.00	‡‡8.00

‡Price of Saturday, March 30.

‡‡Only one seller quoting

OKLAHOMA

	Prices April 22	Prices April 15	Prices April 8
41-43 w.w. kerosene	6.50	6.75	6.75 – 6.875
42-44 w.w. kerosene	6.75 – 7.00	7.00 – 7.25	7.00 – 7.25

KANSAS (F. O. B. refinery Kansas destination)

41-43 w.w. kerosene	6.75 – 6.875	6.875– 7.00	6.875– 7.00
42-44 w.w. kerosene	7.125	7.125	7.125

NORTH TEXAS

40-42 w.w. kerosene	6.125	6.25	6.25 – 6.50
41-43 w.w. kerosene	6.125– 6.25	6.25 – 6.50	6.50 – 6.75

NORTH LOUISIANA (N. La., Ark and Miss. destination)

41-43 w w. kerosene	7.25	7.00 – 7.25	7.25
42-44 w.w. kerosene	7.25	7.25	7.25

ARKANSAS (Arkansas destination only)

42-44 kerosene	7.25	7.25	7.25

CALIFORNIA

38-40 w.w. kerosene	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50

NEUTRAL OIL

PENNSYLVANIA

Vis.	(Viscosity at 70°F.)		
200 No. 3 Assoc. Filt.	29.50 –30.00	29.50 –30.00	29.00 –29.50
180 No. 3 Assoc. Filt.	26.00 –28.00	25.00 –28.00	25.00 –27.00
150 No. 3 Assoc. Filt.	22.00 –23.00	21.50 –23.00	21.00 –22.00
	(Non Viscous)		
34 Grav. 330-340 Flash	7.50 – 9.00	7.50 – 8.50	8.00 – 8.50

‡Price of Saturday, March 30.

****OKLAHOMA**

Vis. Color	(Viscosity at 100°F.)		
100—No. 2	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00
150—No. 3	7.50 – 8.50	7.50 – 8.50	7.50 – 8.50
150—No. 4	6.50 – 7.50	6.50 – 7.50	6.50 – 7.50
180—No. 3	9.00 – 9.50	9.00 – 9.50	8.75 – 9.50
180—No. 4	8.75 – 9.75	8.75 – 9.75	8.75 – 9.75
180—No. 5	8.50 – 9.50	8.50 – 9.50	8.50 – 9.50
200—No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200—No. 4	9.25 –10.00	9.25 –10.00	9.25 –10.00
200—No. 5	9.50	9.00 – 9.50	8.50 – 9.00
220—No. 3	12.50 –13.50	12.50 –13.50	12.50 –13.50
220—No. 4	12.25 –12.50	12.25 –12.50	12.25 –12.50
220—No. 5	11.50 –12.00	11.50 –12.00	11.50 –12.00
240—No. 3	13.00 –13.50	13.00 –13.50	13.00 –13.50
240—No. 4	12.00 –13.00	12.00 –13.00	12.00 –13.00
240—No. 5	11.00 –13.00	11.00 –13.00	11.00 –13.00
280—No. 3	14.00 –15.50	14.00 –15.50	14.00 –15.50
280—No. 4	13.00 –14.00	13.00 –14.00	13.00 –14.00
280—No. 5	12.00 –13.00	12.00 –13.00	12.00 –13.00
300—No. 5-6	15.00 –17.00	15.00 –17.00	15.00 –17.00

GULF COASTAL

Vis. Color	(Viscosity at 100°F., pour test 0)		
100—No. 2 Pale	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00
200—No. 3 Pale	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
300—No. 3 Pale	10.00 –10.50	10.00 –10.50	10.00 –10.50
500—No. 3½ Pale	12.00 –12.50	12.00 –12.50	12.00 –12.50
750—No. 4 Pale	14.00 –14.50	14.00 –14.50	14.00 –14.50
200—No. 5½ Red Oil	8.50 – 8.50	8.00 – 8.50	8.00 – 8.50
300—No. 5½ Red Oil	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
500—No. 6 Red Oil	10.00 –10.50	10.00 –10.50	10.00 –10.50
750—No. 6 Red Oil	12.00 –12.50	12.00 –12.50	12.00 –12.50

†Prices nominal ††Only one refiner quoting *Quotations only **Represents both sales and quotations ***Represents quotations and offers to buy

Refinery Markets Wax, Lubricants, Heavy Oil

Prices given below are in cents per gallon, F. O. B. refinery except where $ is shown

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

CALIFORNIA

Vis. Color	Prices April 22	Prices April 15	Prices April 8
	(Viscosity at 100°F.)		
100—No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200—No. 3	11.50	11.50	11.50
300—No. 3	13.00	13.00	13.00
450—No. 3	15.50	15.50	15.50
550—No. 3	16.50	16.50	16.50
600—No. 3	17.00	17.00	17.00
200—No. 5	11.00	11.00	11.00
300—No. 5	12.00	12.00	12.00
400—No. 5	14.00	14.00	14.00
500—No. 5	15.00	15.00	15.00
600—No. 5	16.00	16.00	16.00
700—No. 7	18.00	18.00	18.00

CYLINDER STOCKS

****OKLAHOMA**

190-200 Vis. at 210°Brt. St.	33.50	33.50	33.00
150-160 Vis at 210° Brt. St.	32.00	32.00	31.00
600 E. St. 140-150 Vis.-210°	18.00 –19.00	18.00 –19.00	18.00 –19.00
600 St. Ref. Olive Green	11.00 –12.00	10.00 –12.00	10.00 –12.00
600 St. Ref. Dark Green	8.00 –10.00	8.00 –10.00	8.00 –10.00
Black Oil	5.00	5.00	5.00

PENNSYLVANIA (A. S. T. M. Tests)

600 Steam Refined, filterable	†32.00 –33.00	30.00	No quotations on Cylinder Stocks
650 Steam Refined	†38.00	35.00 –37.00	
600 Flash	†41.00	†39.00 –40.00	
625 Flash	†44.00 –45.00	†42.00	
600 Warren E	†33.00 –34.00	†30.00 –32.00	
600 Oil City E	†32.00 –33.00	†29.00 –30.00	
600 D Filtered	†36.00 –37.00	34.00 –35.00	....
Cold Test Stock, 40-50p. p., 140-150 vis. at 210° 540-550 flash, No. 8 color	49.00 –50.00	49.00 –50.00	‡‡47.00–49.00
40-50 p.p., 140-150 vis. at 210°, 540-550 flash, No. 6-6½ color diluted	48.00 –49.00	48.00 –49.00	‡47.00 –48.00

‡One seller quoting, limited quantity. ‡‡Three sellers quoting. ***No quotations.

WAX

PENNSYLVANIA Per pound, New York

122-124 white crude scale, a. m. p.	3.50 – 3.75	3.75 – 3.875	3.75 – 3.875
124-126 white crude scale, a. m. p.	3.75 – 4.00	3.75 – 4.125	‡4.00 – 4.125

‡One seller quoting.

OKLAHOMA

**124-126 White Crude Scale, a. m. p.	3.375– 3.50	3.375– 3.50	3.50 – 3.75

CALIFORNIA

White crude scale, per pound, ton lots, a. m. p.	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50

FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)

36-40 fuel oil	5.25 – 5.75	5.375– 5.75	5.25 – 5.50
30-34 fuel oil	4.75 – 5.00	4.875– 5.00	4.875– 5.00
28-32 fuel oil	4.75 – 5.00	4.875– 5.00	4.875– 5.00

†Prices Nominal ††Only One Refiner Quoting *Quotations only **Represents both sales and quotations

OKLAHOMA

	Prices April 22	Prices April 15	Prices April 8
38-40 straw distillate	†3.50 – 3.625	†3.75	3.75
36-38 straw distillate	†3.375– 3.50	†3.375– 3.625	†3.375– 3.625
32-36 gas oil, straw	2.75 – 3.00	‡2.75 – 3.00	2.875– 3.00
32-36 dark gas oil	2.50 – 2.75	‡2.50 – 2.75	‡2.75 – 3.00
32-36 zero gas oil	2.75 – 3.00	2.75 – 3.00	....
28-30 fuel oil (in bbls.)	$0.90 –$0.95	$0.95 – 1.00	$1.00 – 1.10
26-28 fuel oil (in bbls.)	$0.725– 0.75	$0.725– 0.775	$0.725– 0.80
24-26 fuel oil (in bbls.)	$0.65 – 0.70	$0.675– 0.725	$0.675
22-26 fuel oil (in bbls.)	$0.575– 0.625	$0.575– 0.625	$0.575– 0.625
18-22 fuel oil (in bbls.)	$0.55 – 0.575	$0.55 – 0.575	$0.55 – 0.575
16-18 fuel oil (in bbls.)	$0.50 –$0.575	$0.50 – 0.55	$0.50 – 0.55
14-16 fuel oil (in bbls.)	$0.50 –$0.55	$0.50	$0.50

‡Zero cold test gas oil sells for 0.25 cent higher.

KANSAS (F. O. B. refinery Kansas destination)

38-40 straw distillate	3.875	3.875	3.875
36-38 straw distillate	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
32-36 gas oil	2.625– 2.75	2.625– 2.75	2.75
24-26 fuel oil	$0.70 – 0.75	$0.70 – 0.75	*$0.85 – 0.90
18-22 fuel oil	$0.65 – 0.70	$0.65 – 0.70	*$0.70 – 0.75

NORTH TEXAS

38-40 straw distillate	3.75	3.75 – 4.00	3.75 – 4.00
32-36 gas oil, cracked	2.25 – 2.50	2.375– 2.50	2.50 – 2.75
32-36 St. reduced gas oil	2.25 – 2.50	2.375– 2.50	2.50 – 2.75
24-26 fuel oil (in bbls.)	$0.65 – 0.675	$0.65 – 0.70	$0.725– .75
20-24 fuel oil	$0.65 – 0.70	$0.65 – 0.675	$0.70 – 0.725

****WEST TEXAS (F. o. b. West Texas refinery, for unrestricted shipment)**

34-38 gas oil	2.625	2.625– 2.75	2.75 – 2.875
30-32 gas oil	2.375– 2.50	2.50	2.50 – 2.75
18-22 fuel oil	$0.30 – 0.40	$0.35 – 0.45	$0.35 – 0.45

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	3.00 – 3.25	3.00	2.75 – 3.00
32-36 gas oil, straw	3.00 – 3.25	3.00	2.75 – 3.00
16-20 fuel oil (in bbls.)	$0.75 – 0.80	$0.70	$0.725

ARKANSAS (Arkansas destination only)

32-36 gas oil, straw	3.00 – 3.25	3.00	2.75 – 3.00
32-36 gas oil	3.00 – 3.25	3.00	2.75 – 3.00
28-30 gas oil	2.875	2.875	2.875– 3.00

CALIFORNIA (F. O. B. San Joaquin Valley. At San Francisco, 4c per bbl. more)

14-18 fuel oil (per bbl.)	$0.55 –$0.65	$0.50 –$0.65	$0.55 –$0.65
14-18 Bunker oil (per bbl.)	$0.65 –$0.75	$0.65 –$0.80	$0.65 –$0.70
30-34 gas oil (per bbl.)	$0.95 –$1.05	$0.95 –$1.05	$0.95 –$1.05
27 Plus Diesel oil (per bbl.)	$0.90 –$1.00	$0.90 –$1.00	$0.90 –$1.00

PETROLATUMS

PENNSYLVANIA (In barrels, carload lots, f. o. b. refinery. In tank cars ½c to ¾c per pound less.) Two refiners quoting.

Snow White	8.50	8.50	8.50
Lily White	7.50 – 7.625	7.50 – 7.625	7.50 – 7.625
Cream White	6.50 – 6.625	6.50 – 6.625	6.50 – 6.625
Light Amber	3.625	3.625	3.625
Amber	3.375	3.375	3.375
Red	3.125	3.125	3.125

PETROLEUM COKE

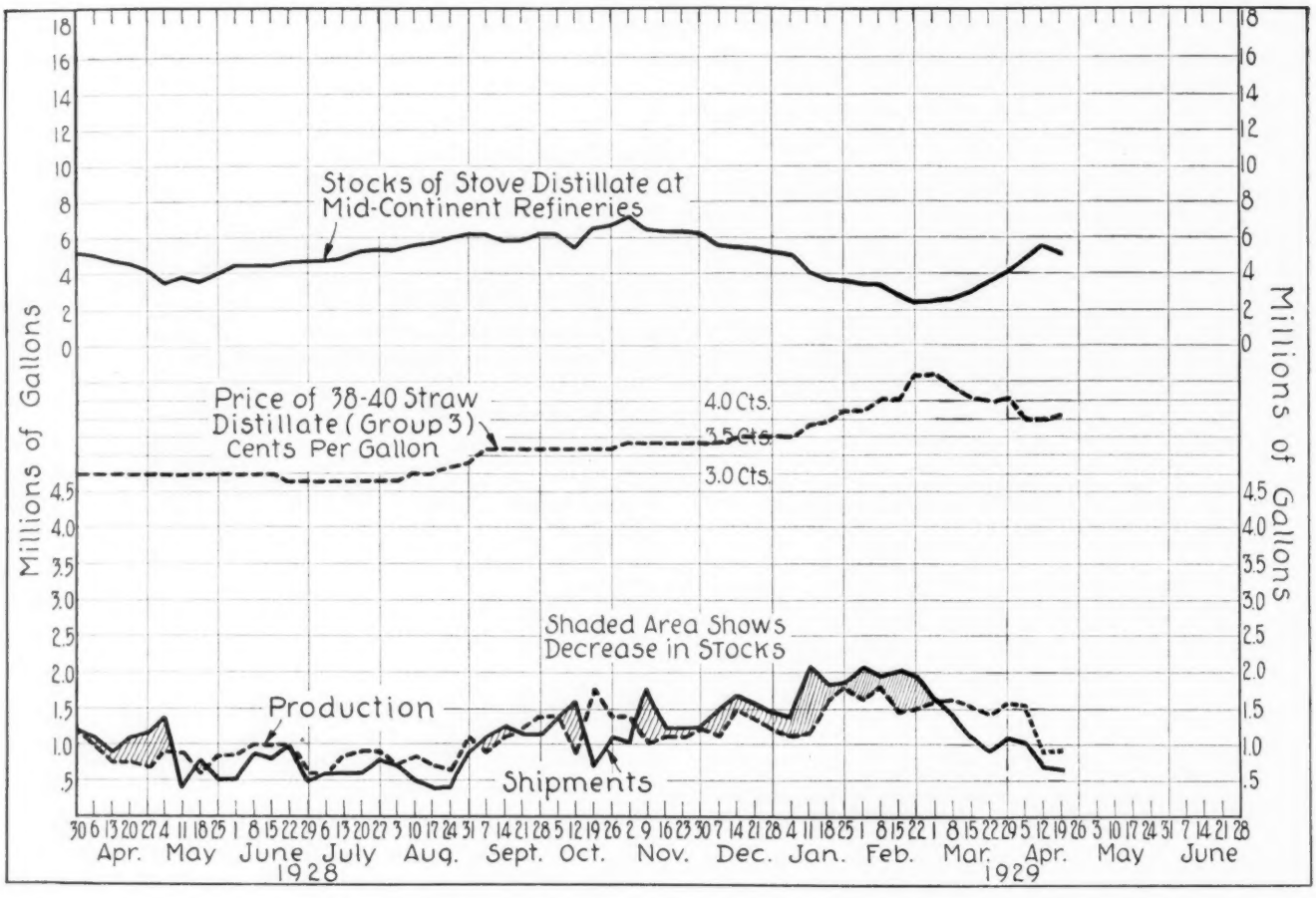
****OKLAHOMA**

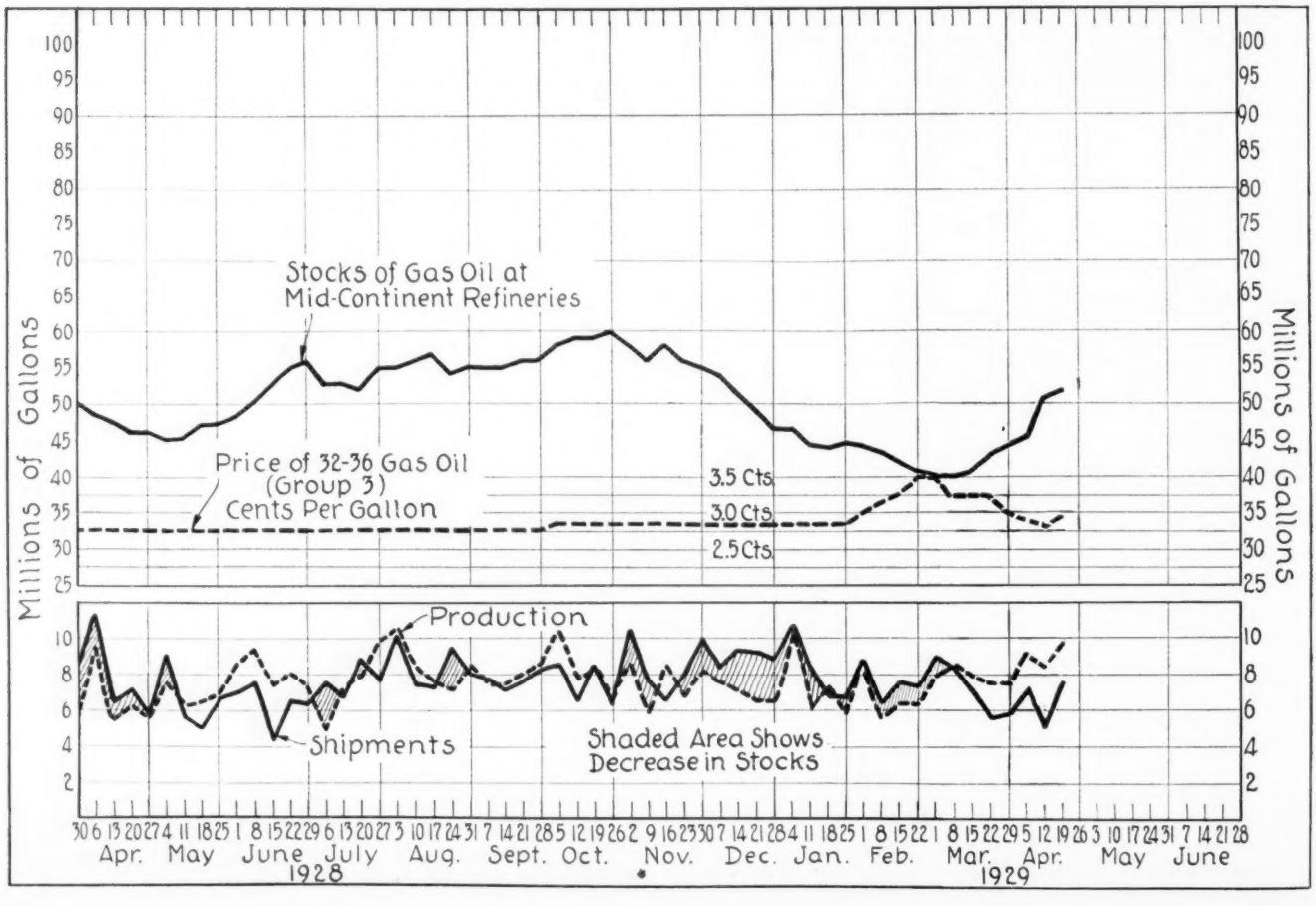
(Per ton in car lots)

Lump	$4.50 – 5.00	$4.50 – 5.00	$4.50 – 5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

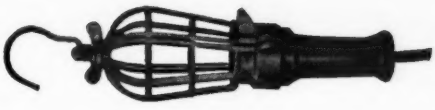
Barometer of Mid-Continent Refinery Market—Week Ending April 19

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 91 Plants to National Petroleum News


Stocks of Stove Distillate at Mid-Continent Refineries
Price of 38-40 Straw Distillate (Group 3) Cents Per Gallon
4.0 Cts.
3.5 Cts.
3.0 Cts.
Shaded Area Shows Decrease in Stocks
Production
Shipments
Millions of Gallons
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June
1928
1929


Stocks of Gas Oil at Mid-Continent Refineries
Price of 32-36 Gas Oil (Group 3) Cents Per Gallon
3.5 Cts.
3.0 Cts.
2.5 Cts.
Production
Shipments
Shaded Area Shows Decrease in Stocks
Millions of Gallons
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June
1928
1929

THE MOST EFFICIENT AND EFFECTIVE WAY TO ILLUMINATE GAS STATIONS



Type LPG
Safety Hand Lamp

Type MSA1
Gasoline Station Floodlight

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Having been especially designed for gas station lighting, type MSA1 is the best floodlight for this purpose. Highly efficient with a wide spread and short range, it gives correct light distribution for maximum results.

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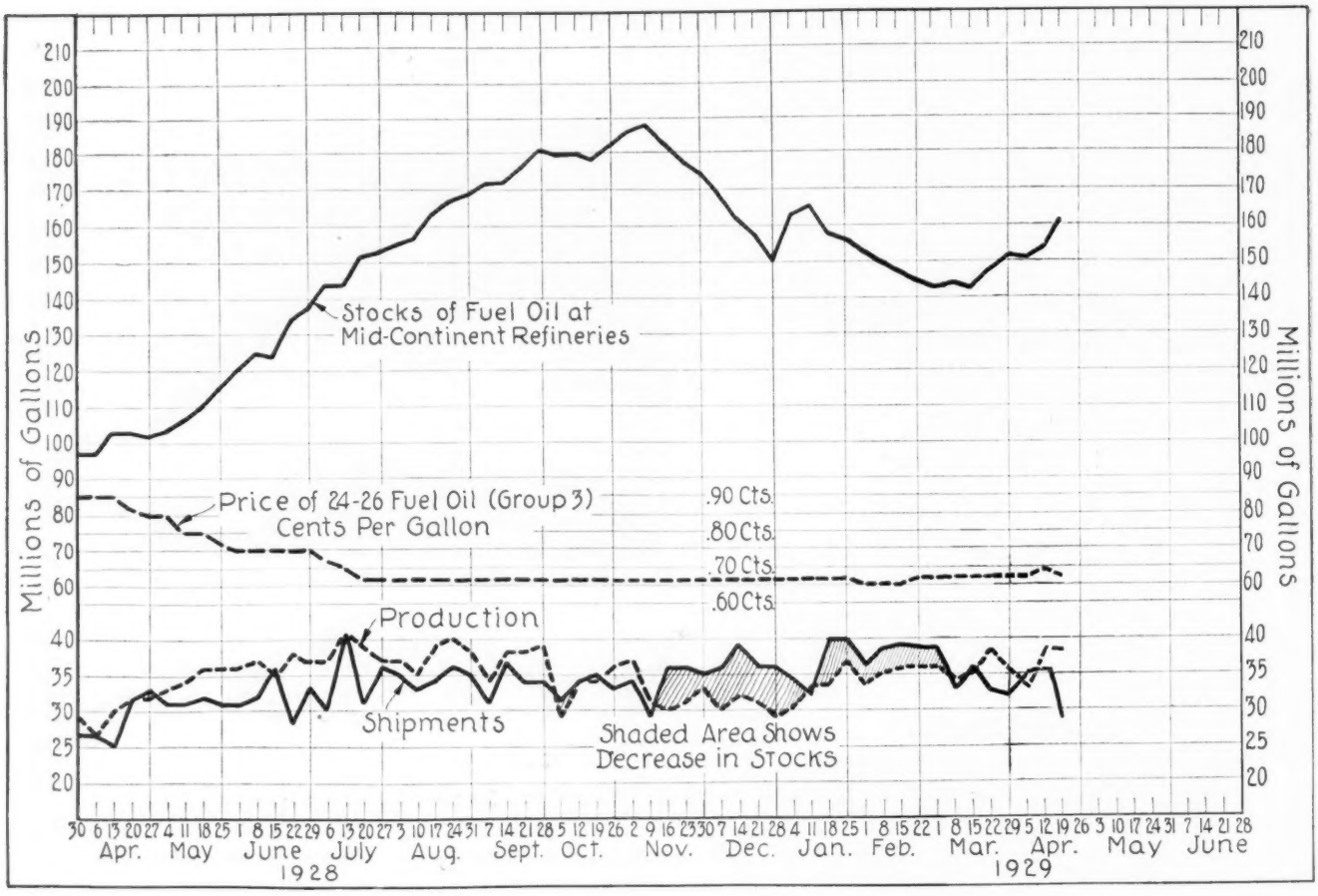
ATLANTA
CHICAGO
ST. LOUIS
SAN FRANCISCO
MINNEAPOLIS
MILWAUKEE

C-H 416

Barometer of Mid-Continent Refinery Market—Week Ending April 19

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 91 Plants to National Petroleum News


Millions of Gallons
Millions of Gallons
Stocks of Fuel Oil at Mid-Continent Refineries
Price of 24-26 Fuel Oil (Group 3) Cents Per Gallon
.90 Cts.
.80 Cts.
.70 Cts.
.60 Cts.
Production
Shipments
Shaded Area Shows Decrease in Stocks
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June
1928
1929

California Refinery Market

Gasoline Inquiries Increase

LOS ANGELES, April 18

FROM all indications next week should show a strong market in California. Sellers reported a marked increase in the inquiries and there is every reason to expect a number of export sales during the next few weeks.

Quotations on the eastern seaboard have shown an advance that will enable the local shippers to realize some profit even at the present prices. One seller remarked that he would sit tight with the hope of a still higher price at point of delivery in the near future.

Foreign buyers were reported to be in the market for gasoline and light oils. One cargo of gasoline was reported sold last week for the high price of 7.75 cents.

Refinery products were comparatively quiet on the Pacific Coast, although U. S. Motor was stronger for in state consumption, being quoted at from 7.75 to 10.50 cents without tax. There is a feeling among local marketers that the price will become stronger as the seasonal demand is felt and they are therefore not anxious to sell.

Out of state shipments, at prices ranging from 7.50 to 8.50 cents, were reported by several sellers. Trade with Idaho (through Portland), Utah and Arizona has picked up considerably, even though the out of state shippers are operating on a very slim margin of profit.

Other refinery products remained as quoted last week, with the exception of engine distillate, which showed unsteadiness. It is reported that this commodity could be purchased below 8 cents.

An effort, upon the part of retail operators selling major gasoline, to raise the price from 18½ to 19½ cents was undoubtedly a failure. The loss in gallonage sustained by these resellers was too great and they were forced to drop back, some of them going as low as 16½ cents.

With more and more stations offering independent gasoline at prices ranging from 14½ to 16½ cents it is a mystery why any attempt should be made by the majors to raise the price at this time. From reports that are being circulated it appears that the independents are getting the cream of the trade, a condition that is becoming very obnoxious to the operators handling major products exclusively.

PHILADELPHIA, April 19.—A connection of a half century with E. F. Houghton & Co., manufacturer of industrial oils and leathers here, ended for Charles E. Carpenter upon his death April 7 at Miami Beach, Fla. Mr. Carpenter was for many years president and general manager. He was 67 years old.

Pennsylvania Market

Cylinder Stocks Higher

CLEVELAND, April 22.—Cylinder stocks continued the most active commodities in western Pennsylvania refinery markets last week. Gasoline prices were stationary and movement slowed up considerable due to inclement weather. Kerosene also was a bit sluggish. Neutral oils and bright stocks were generally unchanged.

Heavy rains retarded gasoline movement to the point where some distress goods appeared in the early days of last week. Against a minimum of 9.25 cents at which the market opened April 15, 58-60 U. S. Motor was offered at 9 to 9.125 cents by three sellers throughout the balance of the week. Some sellers who had sold practically their entire output for the rest of April advanced their prices to 9.75 cents but only in few instances were sales reported at this figure. Higher gravity gasolines were generally unchanged.

The rainy weather held up spring plowing somewhat and kerosene shipments suffered as a consequence. Several sellers reported considerable difficulty in getting shipping instructions. Current prices, however, showed no recessions with 45 w.w. at a minimum of 7.50 cents.

The market for cylinder stocks continued to be purely a seller's market. These oils were exceptionally active from the standpoint of inquiries but scarcity of goods prevented any appreciable volume of trading. Buyers seemed willing to pay almost any price in order to get prompt shipment.

Several small sales of 600 steam refined stock were reported early in the week at 30 to 31 cents and later at 32 cents. One or two nominal quotations were made at this figure Friday and Saturday but the majority of sellers indicated 33 cents as the minimum they would take for the small amount of stuff they would have to offer for shipment before May 1. Other grades of cylinder oils were quoted proportionally higher and only scattered sales were reported.

Bright stock was more freely offered for prompt shipment last week but buyers were reluctant to pay the higher prices quoted. Light bright was held at 49 cents minimum with the majority of sellers quoting 50 cents. Dark bright was available at 48 to 49 cents.

Increased demand was reported for wax from domestic buyers; export dealers in New York were said to be showing very little interest in the market. Prices eased off 0.125 to 0.25-cent in spite of the better demand.

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New York Domestic Market

Weather Holding Back Gasoline

Staff Special
NEW YORK, April 20

WHILE the general advance of gasoline prices in the East, which was predicted by refiners in this district a week ago, failed to materialize, there was still an optimistic feeling in the market at the close of the week and it was the opinion that prices were still tending upward. Adverse weather conditions which have been experienced this week throughout the eastern marketing territory largely has been responsible for holding up the advance.

There was only one district that increased prices. U. S. Motor at Baltimore was higher by 0.25 of a cent the range being 9 to 9.25 cents, where a week ago it was 9 cents flat. While there were higher quotations out at several points at the end of the week, they were being made by one or two companies which have very little gasoline to offer, and the bulk of goods continued to move at previous prices.

At New York there were a number of different opinions regarding the market. Officials of one company which does quite a large business in that district stated that they were having difficulty in disposing of goods by quoting less than 9 cents for spot shipment. Other companies claimed that business was good and jobbers were asking for future contracts which none of the refiners were willing to grant.

Some goods was reported moved early in the week at 8.50 cents, New York, but a check revealed that it was contract gasoline and in no way affected the spot market. Generally, refiners were quoting 9 to 9.25 cents with the price being shaded in some instances. One refiner announced April 20, that effective April 22, his price for U. S. Motor at New York would be 9.50 cents. No other companies made that advance.

California gasolines were in good shape and prices were higher for spot shipment. At New York the price was 9 to 9.50 cents and 9 to 9.25 cents at Philadelphia and Baltimore with no shading being done at any of the three points. The price of 9.50 cents at New York was established early in the week when two companies sold goods for spot shipment at that figure.

Heavier oils were in good demand, excepting kerosenes, although there were price changes only in Diesel oil, which was 10 cents per barrel higher than a week ago. The price April 20, was $2.00 to $2.10. Kerosene demand was fairly good although there has been very little importanat trading done. Furnace oils were in exceptionally good demand.

Gulf Export Market

Buyers Showing Little Interest

Staff Special
NEW YORK, April 20

PRICES on all commodities, with the exception of gas oil, were unchanged the past week and foreign buyers of gasolines showed little more than passing interest in the market.

One cargo was sold at prevailing prices, April 19, for approximately 70,000 barrels of U. S. Motor and 64-66, 375 end point gasoline, the goods to be shipped either from a north Atlantic port or the Gulf within 60 days. The inquiry came into the market early in the week.

Another inquiry came into the market April 16, but details could not be learned at the time. One seller who was in touch with the buyers stated that it would probably be more than a week until the business was closed.

Despite the fact that there was not a great deal of interest in the market, suppliers April 20, said they were expecting an increase in gasoline prices at the Gulf, the increase being variously estimated at from 0.25 to 0.50 cent. It was cited that an advance was logical inasmuch as prices for gasoline at the Gulf for domestic shipment were firming, market conditions were better along the Eastern seaboard and Mid-Continent prices were steadily rising. The advance was expected before the current week closed.

Gas oils continued active and prices advanced an 0.125 cent with a comparatively limited amount of material available. An Eastern buyer April 18, bought two cargoes at the Gulf, one for foreign and the other for domestic shipment, paying four cents a gallon for each. One cargo was for 26-29 gravity low sulfur, and the other for 32-34 high sulfur. When questioned about having to pay the same price both for low and high sulfur goods, the buyer remarked that "there was a scarcity of the goods in the market due to the fact that most refiners were cracking their gas oils." An unusually good demand for gas oils was being experienced now he said.

In sympathy with rising markets in other areas and with the summer demand bringing about increased consumption, prices for domestic gasoline at the Gulf were higher at the end of the week by an 0.125 of a cent. Goods were moving April 20, at 7.875 cents and in several instances refiners were quoting 8 cents. While at the first of the week some shading of 7.75 cents was being done, later the practice was eliminated and refiners were of the opinion that 8-cent gasoline would be seen in a few days. It was believed, however, that the advance rested largely on the expected increase of prices in the export market.

Wax Market

Prices Lower

NEW YORK, April 20.—Very little activity was shown in the wax market during the week closed April 20, either from foreign or domestic buyers and, as a result, prices of all grades were lower by an 0.125 of a cent and more.

April 20, white crude scale was being quoted at 3.50 to 4 cents, a wider range than the week previous, as sellers were divided as to the actual market. One seller claimed he was enjoying a fair business at 4 cents on both 122-124 and 124-126 A.m.p. grades, but the majority of sellers were quoting from the lower figure up to 3.875 cents. Fully refined goods was also lower and the demand was reported almost without exception, as being "slow."

A resume of the market shows that there was only one sizable order sold and that, according to one seller, was

purely a "speculative" deal. The transfer involved between 100 and 200 tons of 125-127 A.m.p. grade, and was made over the balance of the year at 4.25 cents per pound. While other sales were reported they were for much smaller quantities and were made at lower prices as the week drew to an end.

Concensus among the trade is that wax prices are scheduled to go lower as the summer progresses. Stocks have been accumulating for the past several weeks and suppliers, judging from the present condition of the market, expect further accumulations. No relief is expected from foreign interests until late fall or early winter, as the opinion is, that buyers in foreign fields have contracted enough goods from Poland to keep them supplied until that time.

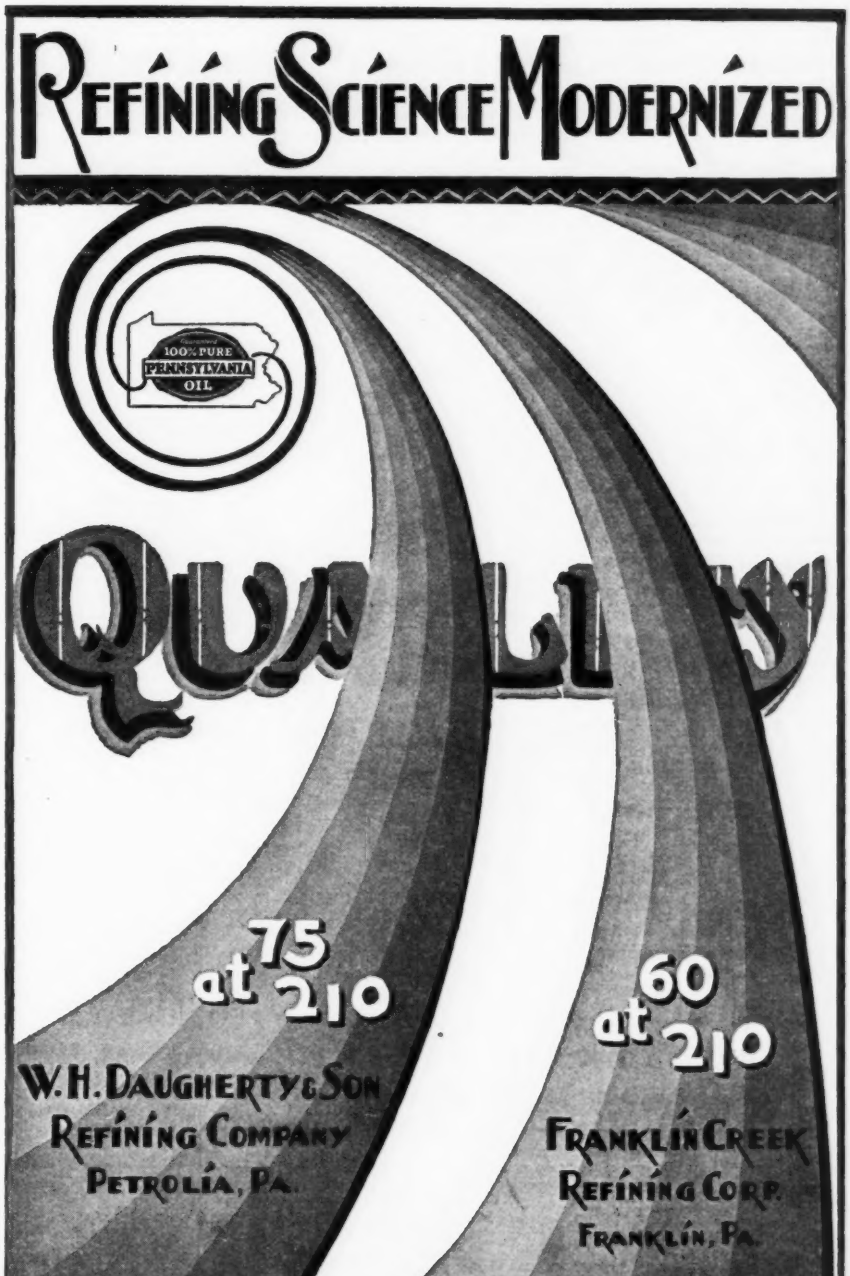
Not Enough Oil Produced Outside U. S.

NEW YORK, April 19.—That the 30 per cent of petroleum produced in the world outside of the United States is insufficient to supply the ever-increasing demand in foreign countries, is revealed in a survey of world trade in oils recently completed by the Department of Commerce in cooperation with the American Petroleum Institute and published by the latter in a booklet called "International Trade in Petroleum and Its Products."

Since 1924 exports of petroleum and its products have attained an average annual value of $500,000,000, nearly 11 per cent of the total value of all domestic exports. Oil exports have long ranked second among major classifications of this country's shipments abroad, and first among manufactured or processed commodities.

This bulletin presents a comprehensive survey of the imports, exports, re-exports, and production of petroleum products in foreign countries, based upon the latest available information. The data have been compiled by the petroleum section, Minerals Division, Bureau of Foreign and Domestic Commerce, with the cooperation of the Institute, 250 Park Ave., New York.

CLEVELAND, April 20.—The U. S. Supreme court has reversed the Louisiana Supreme court in a decision by a state court which sought to collect the 5 cent state tax on gasoline imported into the state for future exportation by steamer. The Carson Petroleum Co. was asked to pay on gasoline it was storing at its St. Rose terminal pending loading on tank steamers. The U. S. Supreme court agreed with the Carson interests that the gasoline was in transit from Mid-Continent refineries to foreign countries and not subject to tax.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100% PURE PENNSYLVANIA OIL
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60 at 210
FRANKLIN CREEK REFINING CORP. FRANKLIN, PA.
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Houston, Texas.....1514 Petroleum Bldg.
Tulsa, Okla.....Philtower Bldg.
Los Angeles, Cal.....1031 So. Broadway

Complete Seaboard Market

(Export Markets for whole year given in OIL PRICE HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the whole year)

Eastern Domestic Market

(Prices for tank-car lots, f. o. b. refinery or seaboard terminal, representing majority of quotations.)

U. S. MOTOR GASOLINE	April 22	April 15	April 8
New York harbor	9.00 – 9.25	9.00 – 9.25	8.625– 9.00
Portland district	**11.00–11.25	**11.00–11.25	*11.00
Boston district	**10.50–10.75	**10.50–10.75	*10.50
Providence district	**10.50–10.75	**10.50–10.75	*10.50
Philadelphia district	9.00 – 9.50	9.00 – 9.50	8.75 – 9.00
Baltimore district	9.00 – 9.25	9.00	8.75 – 9.00
Norfolk district	9.00	9.00	8.75 – 9.00
Charleston district	9.00	9.00	8.75 – 9.00
Savannah district	9.00	9.00	9.00
Jacksonville district	9.00	9.00	9.00
CALIFORNIA, U. S. MOTOR GASOLINE			
New York harbor	9.00 – 9.50	9.00 – 9.25	9.00
Philadelphia district	9.00 – 9.25	9.00	9.00
Baltimore district	9.00 – 9.25	9.00 – 9.25	9.00
WATER WHITE KEROSENE			
New York harbor	8.00	8.00	8.00
Philadelphia district	8.00	8.00	8.00
Baltimore district	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
GAS OIL: 28-34 Gravity			
New York harbor	4.75 – 5.00	4.75 – 5.00	4.50 – 5.00
Boston district	4.75 – 5.00	4.50 – 5.00	4.50 – 5.00
FURNACE OIL: 36-40 Gravity			
New York harbor	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50
Boston district	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50
GRADE C BUNKER OIL†			
New York harbor	$1.05	$1.05	$1.05
Boston district	$1.05	$1.05	$1.05
DIESEL OIL			
New York harbor	$2.00 –$2.10	$2.00	$2.00
MEDICINAL OILS, RUSSIAN			
885-890 s.g., 325-330 vis.	$0.80 – 0.90	$0.80 – 0.90	$0.80 – 0.90
870-875 s.g., 150-155 vis.	$0.67 – 0.77	$0.67 – 0.77	$0.67 – 0.77
860-865 s.g., 80-85 vis.	$0.65 – 0.75	$0.65 – 0.75	$0.65 – 0.75

Note: Above gasoline prices do not include inspection tax levied in some states.
*Minimum delivered. **Delivered prices. †Lighterage 5c per bbl. additional

New York Export Market

(Lubricating oils are per gal. in bbls.)

	April 22	April 15	April 8
CYLINDER OILS (Pennsylvania Products)			
Bright stock, dark	*55.00 –56.00	*51.00 –52.00	*51.00 –52.00
600 D filtered	*43.00	*37.00 –38.00	*37.00 –38.00
600 Warren E filtered	*40.00	*36.00 –37.00	*36.00 –37.00
600 s.r. unfiltered	*38.00 –40.00	*34.00 –35.00	*34.00 –35.00
650 s.r., unfiltered	*45.00	*40.00 –41.00	*40.00 –41.00
600 flash, s.r.	*46.00	*43.00 –44.00	*43.00 –44.00
630 flash, s.r.	*50.00 –52.00	*49.00 –50.00	*49.00 –50.00
*Nominal			
RED ENGINE OILS (Vis. 100°)			
300 vis. No. 6½ color	20.00	20.00	20.00
250 vis. No. 6 color	19.50	19.50	19.50
200 vis. No. 6 color	18.00	18.00	18.00
PALE ENGINE OILS (Vis. 100°)			
230 vis. No. 3¾ color	23.50	23.50	23.50
180 vis. No. 3¼ color	19.00	19.00	19.00
100 vis. No. 2¼ color	16.00	16.00	16.00
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	33.00	33.00	33.00
500 vis. No. 6½ color	31.00	31.00	31.00
400 vis. No. 7¼ color	30.00	30.00	30.00
300 vis. No. 6 color	29.00	29.00	29.00
200 vis. No. 6 color	28.00	28.00	28.00
MEDICINAL OILS			
875-885 s.g.	$0.80	$0.80	$0.80
865-870 s.g.	$0.70	$0.70	$0.70
WAXES (In cents per pound, f.a.s. carload lots)			
WHITE CRUDE SCALE (In barrels)			
122-124 A.m.p.	3.50 – 3.75	3.75 – 3.875	3.50 – 3.75
124-126 A.m.p.	3.625– 4.00	3.75 – 3.875	3.50 – 3.75
FULLY REFINED (In burlap bags)			
123-125 A.m.p. Phila.	4.50 – 4.75	5.00 – 5.125	5.00 – 5.125
125-127 A.m.p.	4.75 – 5.00	5.00 – 5.125	5.00 – 5.125
128-130 A.m.p.	5.125	5.25 – 5.50	5.25 – 5.50
130-132 A.m.p.	6.00	6.00 – 6.25	6.00 – 6.25
133-135 A.m.p.	6.25 – 6.50	6.625– 6.875	6.625– 6.875
135-137 A.m.p.	6.50 – 6.75	7.00	7.00
YELLOW CRUDE SCALE			
24-126 A.m.p.	3.625	3.625	3.625

Gulf Export Market

(Prices are f. o. b. Gulf oil terminals in Texas and Louisiana, shipments of 20,000 bbls. or more unless otherwise noted and for export shipment only).

GASOLINE	April 22	April 15	April 8
U. S. Motor	8.50	8.50	8.50
60-62 400 e.p.	9.50	9.50	9.50
61-63, 390 e.p.	9.75	9.75	9.75
64-66, 375 e.p.	10.00	10.00	10.00
U. S. Motor, cases (cargoes)	$1.75	$1.75	$1.75
64-66, cases (cargoes)	$1.90	$1.90	$1.90
KEROSENE			
44 water white	8.75	8.75	8.75
41-43 prime white	7.75	7.75	7.75
Water white, cases (cargoes)	$1.80	$1.80	$1.80
Prime white, cases (cargoes)	$1.70	$1.70	$1.70
DOMESTIC GAS & BUNKER OILS			
*26-30 translucent gas oil	3.875– 4.00	3.75 – 3.875	3.75 – 3.875
*30 plus translucent gas oil	4.00	3.875	3.875
Grade C bunker oil	$0.875–$0.95	$0.875–$0.95	$0.875–$0.95
Grade C bunker oil, cargoes	$0.75 – 0.80	$0.75 – 0.80	$0.70
*Less than ½ of 1% sulfur.			
MEXICAN CRUDE AND BUNKER OILS (F. O. B. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid	$0.65	$0.65	$0.65
Grade C bunker oil, for bunkering purposes, taxes paid	$0.85	$0.85	$0.85
SOUTH TEXAS LUBRICATING OILS, (Viscosity at 100° F.: cold test 0) (Tanker, f. o. b. Houston)			
100 vis. No. 2 unfiltered pale	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50
200 vis. No. 3 unfiltered pale	8.00 – 9.00	8.00 – 9.00	8.50 – 9.50
300 vis. No. 3 unfiltered pale	9.00 –10.00	9.00 –10.00	9.75 –10.50
500 vis. No. 3½ unfiltered pale	10.50 –11.00	10.50 –11.00	11.00 –12.00
750 vis. No. 4 unfiltered pale	13.00 –13.25	13.00 –13.25	13.00 –13.25
1200 vis. No. 5 unfiltered pale	16.00 –17.00	16.00 –17.00	16.00 –17.00
200 vis. No. 5-6 red oil	7.50	7.25 – 7.75	8.00 – 8.50
300 vis. No. 5-6 red oil	8.50 – 9.00	8.50 – 9.00	9.00 – 9.25
500 vis. No. 5-6 red oil	9.50 –10.50	9.50 –10.50	10.00 –10.50
750 vis. No. 5-6 red oil	11.50 –12.00	11.50 –12.00	11.50 –12.00
1200 vis. No. 5-6 red oil	16.50	16.50	15.00 –16.50

Gulf Domestic Market

(Prices are f.o.b. Gulf oil terminals in Texas and Louisiana in shipments of 20,000 bbls. or more, representing sellers' opinions, for domestic shipment only).

	April 22	April 15	April 8
U. S. Motor gasoline	7.875	7.75	7.625– 7.75
41-43 w.w. kerosene	7.25	7.25	7.25
*26-32 translucent gas oil	4.00	3.875	3.875
*Less than ½ of 1% sulfur.			

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	April 22	April 15	April 8
Gasoline, U. S. Motor, 53-55 Gravity	7.00 – 7.75	7.00 – 7.75	7.00 – 7.75
Gasoline, U. S. Motor, blends and special cuts	7.50 –10.00	7.50 –10.00	7.50 –10.00
Gas Oil, 30-34, per barrel	$0.95 –$1.05	$0.95 –$1.05	$0.95 –$1.05
Diesel Oil, 27 plus, per barrel	$0.875–$1.00	$0.875–$1.00	$0.875–$1.00
Bunker oil, 14-18, per barrel	$0.70 –$0.85	$0.70 –$0.85	$0.70 –$0.85
Fuel oil, 14-18 per barrel	$0.60 –$0.85	$0.60 –$0.85	$0.60 –$0.85
Kerosene, 38-40 w.w., 125-150 flash, per gal.	5.50 – 6.25	5.50 – 6.25	5.50 – 6.25
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Kerosene, 38-40 w.w., 125-150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.45 –$1.50

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)

	April 22 Crude &/or Fuel	Refined Oil &/or Spirits
Calif. to U. K. or Continental ports*	28–30	28
Gulf to U. K. or Continental ports*	17–18	17/6–18/6
North Atlantic to U. K. or Continental ports*	16	15/6–16/6
Calif. to North Atlantic ports (not E. of N. Y.)	70	72–75
Gulf to North Atlantic ports (not E. of N. Y.)**	23	28–29

*Continental ports in the range between Bordeaux and Hamburg, both inclusive.
**For Venezuela loading 1c per bbl. additional. For Tampico loading 4c per bbl. additional.

Canfield

Filtered Products

THE Canfield 3-compartment tank car offers a convenient way of ordering Canfield Filtered Motor Oils and Neutrals in three different grades, or with two other different Canfield products. Canfield 3-compartment tanks hold 5250, 6000, and 7500 gallons, split three ways: 2-compartment tanks total 4500 gallons; straight tanks hold from 4500 to 8000 gallons.

WHATEVER the quantities in which you buy, Canfield Filtered Products will earn a mighty important place with your trade.

Canfield Filtered Motor Oils are made from high-grade Mid-Continent paraffine base crude. They are highly filtered through Fuller's Earth. They have a high resistance to emulsion; they withstand oxidation at high temperatures; they meet the most popular viscosity standards. Their snappy color will appeal to you.

Canfield Filtered Products are shipped in tank cars; in assorted carlots, along with Canfield Greases and other lubricants listed at right; in drums and barrels. We'll be proud to send you samples.

There's a newcomer in the list below, Canfield Penetrating Oil, a wonderful new product. Check it, with others and mail for samples and quotations.

Tank Cars	Drums	
☐	☐	Premium Motor Oils (100% Penna.)
☐	☐	Premium Tractor Oils (100% Penna.)
☐	☐	Canfield Filtered Motor Oils
☐	☐	Mid-Continent Motor Oils
☐	☐	Mid-Continent Tractor Oils
☐	☐	Zero Oils
☐	☐	Black Oils
☐	☐	Car Oils
☐	☐	Castor Machinery Oils
☐	☐	Soluble Oils
☐	☐	Cutting Oils
☐	☐	Viscous Neutrals
☐	☐	Non-Viscous Neutrals
☐	☐	Red Oils
☐	☐	Filtered Cylinder Stocks
☐	☐	Steam Refined Cylinder Stocks
	☐	Belt Oil

Drums	Barrels	Small Packages	
☐	☐	☐	CANFIELD PRESS-SURE LUBRICANT
☐	☐	☐	ZERO GEAR LUBRICANT
☐	☐	☐	P. O. C. GEAR LUBRICANT
☐	☐	☐	Cup Greases
☐	☐	☐	Crank Pin Grease
☐	☐	☐	Graphite Grease
☐	☐	☐	Fibre and Sponge Grease
☐	☐	☐	Mine Car Greases
☐	☐	☐	Axle Grease
☐	☐	☐	Gear Shield
	☐	☐	Auto Soap
	☐	☐	Petrolatums
		☐	Belt Stick
☐		☐	*Canfield Penetrating Oil*

THE CANFIELD OIL COMPANY

Serving Jobbers since 1886

General Offices: CLEVELAND, OHIO

Refineries: Cleveland, Ohio; Coraopolis, Pa.
Compounding and Grease Plant: Cleveland
Greater New York Plant: 285 Tonnelle Ave., Jersey City

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Name .....

Company .....

Address ..... City ..... State .....

NPN 4-24-29

Tank Wagon Service Station Markets for Gasoline and Kerosene

(OIL PRICE HANDBOOK has t.w. and s.s. markets for a whole year, arranged for quick reference)

These Prices in Effect April 22, 1929, as Posted by Principal Marketing Companies

S.O. NEW JERSEY TERRITORY

	Gasoline				Oil
			Total		
	T.W.	Tax	T.W.	S.S.	T.W.
Atlantic City, N. J.	14	2	16	20	13
Newark, N. J.	14	2	16	20	13
Annapolis, Md.	14	4	18	22	13
Baltimore, Md.	14	4	18	22	12
Cumberland, Md.	14	4	18	22	13
Washington, D. C.	14	2	16	20	12
Danville, Va.	14	5	19	23	13
Norfolk, Va.	14	5	19	23	13
Richmond, Va.	14	5	19	23	13
Roanoke, Va.	14	5	19	23	13
Petersburg, Va.	14	5	19	23	13
Charleston, W. Va.	14	4	18	22	13
Keyser, W. Va.	14	4	18	22	13
Parkersburg, W. Va.	14	4	18	22	13
Wheeling, W. Va.	14	4	18	22	13
Charlotte, N. C.	14	5	19	23	13
Hickory, N. C.	14	5	19	23	13
Mt. Airy, N. C.	14	5	19	23	13
Salisbury, N. C.	14	5	19	21	13
Charleston, S. C.	14	6	20	24	13
Columbia, S. C.	14	6	20	24	13

CONTINENTAL OIL

Denver, Colo.	15	3	18	21	15.5
Pueblo, Colo.	15	3	18	21	15.5
Grand Junc., Colo.	18.5	3	21.5	24.5	19
Casper, Wyo.	15	4	19	22	14
Cheyenne, Wyo.	16	4	20	23	15.5
Butte, Mont.	19.5	5	24.5	27.5	20
Helena, Mont.	19.5	5	24.5	27.5	20
Salt Lake City, Utah	17.5	3½	21	24	17
Boise, Ida.	19.5	4	23.5	26.5	19
Twin Falls, Ida.	19.5	4	23.5	26.5	19
Albuquerque, N. M.	16	5	21	24	17

S. O. CALIFORNIA

Phoenix, Ariz.	12	4	16	20	21.5
Los Angeles, Cal.	15.5	3	18.5	22.5	15.5
Fresno, Cal.	16	3	19	23	16.5
San Francisco, Cal.	16	3	19	23	15.5
Reno, Nev.	20	4	24	28	19
Portland, Ore.	16.5	3	19.5	23.5	16.5
Seattle, Wash.	16.5	2	18.5	22.5	16.5
Spokane, Wash.	20.5	2	22.5	26.5	20.5
Tacoma, Wash.	16.5	2	18.5	22.5	16.5

Note: 3c per gal. discount to dealers off t.w. price thru territory.

S. O. LOUISIANA

Little Rock, Ark.	12	5	17	21	13
Alexandria, La.	11	4	15	19	†16
Baton Rouge, La.	10	4	14	18	†14.5
Lake Charles, La.	††12.5	4	††16.5	††20.5	†16
New Orleans, La.	*11.5	4	*15.5	*19.5	†16
Shreveport, La.	11	4	15	19	†15
Lafayette, La.	**12	4	**16	**20	†14
Bristol, Tenn.	15	5	20	23	14
Chattanooga, Tenn.	14.5	5	19.5	23.5	16
Knoxville, Tenn.	15	5	20	24	16
Nashville, Tenn.	14	5	19	21	16
Memphis, Tenn.	13	5	18	22	12.5

*New Orleans gasoline prices include 1c parish tax in addition to 4c state tax, and kerosene prices include 1c state tax and 1c parish tax.

†Kerosene price in Louisiana includes 1c state tax.

**Lafayette gasoline prices include 1c parish tax in addition to 4c state tax.

††Lake Charles gasoline prices include 1c parish tax.

S. O. KENTUCKY

Ashland, Ky.	14	5	19	20	15.5
Catlettsburg, Ky.	14	5	19	20	15.5
Lexington, Ky.	15	5	20	22	15.5
Louisville, Ky.	15	5	20	22	15
Covington, Ky.	15	5	20	21	15.5
Clarksdale, Miss.	16	5	21	23	12.5
Gulfport, Miss.††	17.5	5	22.5	24.5	14
Jackson, Miss.	15	5	20	22	13
Natchez, Miss.	15.5	5	20.5	22.5	14
Vicksburg, Miss.	15.5	5	20.5	22.5	14
Birmingham, Ala.	14	4	18	20	13
Mobile, Ala.‡	17	4	21	23	15
Montgomery, Ala.*	18	4	22	24	16.5
Atlanta, Ga.	17	4	21	23	†16.5
Augusta, Ga.	17	4	21	21	†15.5
Macon, Ga.	17	4	21	23	†16.5
Savannah, Ga.	16	4	20	22	†15.5
Jacksonville, Fla.	17	5	22	24	14.5
Miami, Fla.	18	5	23	25	15.5
Tampa, Fla.	17	5	22	24	14.5
Pensacola, Fla.**	18	5	23	25	14.5

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included. ‡Mobile gasoline prices include 1c city tax.

†Georgia kerosene prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola, which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

Latest Changes In Tank Wagon Prices

Gasoline Changes

S. O. New York—T.w. and s.s. prices gasoline advanced 1c, Vermont, to 20c and 22c generally including 4c tax, **Apr. 15.**

S. O. Ohio—T.w. and s.s. gasoline advanced 1c, through Ohio, covering increase of that amount in road tax, **Apr. 18.** Tax is now 4c.

S. O. Louisiana—S.s. price only of gasoline cut 2c, Nashville, to 21c, **Apr. 16.**

T.w. and s.s. gasoline up 1c, Lake Charles, covering Calcasieu parish tax of that amount, **Apr. 15.** New prices including 1c parish tax and 4c state tax are 16.5c t.w. and 20.5c s.s.

S. O. Nebraska—On page 124 of the April 17 issue, it was stated that s.s. prices of gasoline were advanced 3c through Nebraska, and prices in the table were advanced accordingly. S.s. prices were advanced only 2c on Apr. 1 to cover tax, same as t.w. Prices are corrected in this issue to show only a 2c advance.

S. O. Kentucky—S.s. price only of gasoline cut 2c, Augusta, to 21c, **Apr. 1.** T.w. unchanged at 21c.

S.s. only up 1c, Macon, to 23c, **March 20.**

T.w. cut 2c, s.s. 3c, Ashland and Catlettsburg, to 19c and 20c respectively at both points, **March 23.**

Continental Oil—T.w. and s.s. gasoline up 1c, Pueblo, to 18c and 21c respectively, **Apr. 16.**

Canada—T.w. price only gasoline cut 1c, Montreal, to 24.5c, including 5c tax, **March 14.**

T.w. price only gasoline cut 2c, Ottawa, to 20.5c, including 5c tax, **April 15.**

Kerosene Changes

Atlantic Refining—T.w. price kerosene Brunswick, Ga. has been shown in the tank wagon table at 15.5c including 1c state tax. Price including the tax is 16.5c.

S. O. NEBRASKA

	Gasoline				Oil
			Total		
	T.W.	Tax	T.W.	S.S.	T.W.
Omaha, Neb.	14.25	4	18.25	20.25	13.25
McCook	15.75	4	19.75	21.75	14.75
Norfolk	14.75	4	18.75	20.75	13.75
North Platte	15.75	4	19.75	21.75	14.50
Scottsbluff	15.75	4	19.75	21.75	14.25

S. O. INDIANA

	Gasoline				Oil
			Total		
	T.W.	Tax	T.W.	S.S.	T.W.
Chicago, Ill.	14	0	14	15	13
Decatur, Ill.	14.2	0	14.2	15.2	13.1
E. St. Louis, Ill.	13.4	0	13.4	14.4	12.2
Joliet, Ill.	14.4	0	14.4	15.4	13.3
Peoria, Ill.	14.2	0	14.2	14	13.1
Quincy, Ill.	14.2	0	14.2	15.2	12.9
Indianapolis, Ind.	14.2	4	18.2	19.2	14.2
Evansville, Ind.	14	4	18	19	14
South Bend, Ind.	14.4	4	18.4	19.4	14.4
Detroit, Mich.	14.8	3	17.8	18.8	14.7
Grand Rapids, Mich.	14.7	3	17.7	18.7	14.6
Saginaw, Mich.	14.9	3	17.9	18.9	14.8
Green Bay, Wis.	14.6	2	16.6	17.6	13.4
Madison, Wis.	14.3	2	16.3	17.3	13.1
Milwaukee, Wis.	14.1	2	16.1	17.1	12.9
La Crosse, Wis.	15.2	2	17.2	18.2	14
Minneapolis, Minn.	15.2	2	17.2	18.2	13.9
Duluth, Minn.	15.5	2	17.5	18.5	13.9
Mankato, Minn.	15.1	2	17.1	18.1	13.7
Des Moines, Ia.	14.5	3	17.5	18.5	13.3
Davenport, Ia.	14.5	3	17.5	18.5	13.3
Sioux City, Ia.	14.1	3	17.1	18.1	12.9
Mason City, Ia.	14.5	3	17.5	18.5	13.3
St. Louis, Mo.	*13.9	2	15.9	16.9	12.3
Kansas City, Mo.	†14.9	2	16.9	17.9	11.6
St. Joseph, Mo.	†14.5	2	16.5	17.5	12.2
Fargo, N. D.	16.9	2	18.9	19.9	15.9
Grand Forks, N. D.	17.2	2	19.2	20.2	16.2
Minot, N. D.	16.9	2	18.9	19.9	15.9
Pierre, S. D.	15	4	19	20	14.4
Huron, S. D.	15.3	4	19.3	20.3	14.7
Wichita, Kans.	12.8	3	15.8	16.8	11.8
Bartlesville, Okla.	12.5	3	15.5	16.5	11.5

S. O. Indiana's quantity contract price schedule thru territory except Chicago on tank truck deliveries of gasoline, figured from the service station price, is 2c for 500 gals. or more a month; 2½c for 2000 gals. or more a month and 3c for 6000 gals. or more a month.

In Chicago and vicinity, these discounts apply: Over 500 gals. per month, 2c per gal. off service station price; over 1,000 gals. per month, 4c per gal. off service station price.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. OHIO

Wilmington, O.	*11	4	*15	15	14
Fayette county, Hamilton & Findlay	**13	4	**17	17	14
†At Other Competitive Points	*13	4	*17	18	14
Elsewhere in Ohio	*14	4	*18	19	14

†These points are: all of Columbiana county, including East Liverpool, Wellsville, Salem, Columbiana and Lisbon; all of Franklin county, including Columbus, Westerville, Worthington and Rome; all of Scioto county, including Portsmouth; Fairfield county, including Lancaster; Lorain county, including Elyria, Lorain, etc.; Summit county, including Akron, Barberton, etc.; and these additional points: Marion, Lima, Perrysburg, Bryan, Hicksville, Mansfield, Celina, Fostoria, Piqua and Piketon.

*Dealers and commercial accounts get 2c per gal. off t.w. price. Discounts off service station price eliminated Jan. 29, on which date 2c discount to governmental agencies and public utilities was also discontinued, except on uncancelable contracts.

**Dealer and commercial consumers' discount in Fayette county, including Washington C. H., is 3c per gal. off tank wagon price.

MAGNOLIA PETROLEUM

Muskogee, Okla.	12	3	15	18	13
Oklahoma City	**13	3	16	18	12
Tulsa, Okla.	12	3	15	18	11
Fort Smith, Ark.†	12	†3	15	19	12
Little Rock, Ark.	12	5	17	21	13
Texarkana, Ark.*	14	*2	16	20	13
Dallas, Tex.	11	2	13	17	13
Fort Worth, Tex.	11	2	13	16	13
Houston, Tex.	12	2	14	18	13
San Antonio, Tex.	11	2	13	17	11
El Paso, Tex.	15	2	17	20	16

*Within city of Texarkana, the state tax on gasoline is 2c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 3c applies. In this district outside of the city, the 5c Arkansas tax applies.

**Less 2c to dealers and power trade.

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

Above prices include these inspection fees on both gasoline and kerosene, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosene; Arkansas, 1/20c on both Colorado, 1/10c on both; Florida, 1/8c on both; Indiana, 2/25c on both; Kansas, 1/50c on both; Louisiana, 1/32c on gasoline, 1c on kerosene; Minnesota, 3/50c on both; Missouri, 1/50c on both; Nebraska, 3/50c to 1/2c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c on kerosene; Wisconsin, 3/50c on both.

Kerosene inspection fees only: Iowa, 13/100c; Michigan 1/5c to 4/5c per gal.

In Illinois, cities and villages have the power to appoint oil inspectors and fix inspection fees which is done in some instances. In some cases in the above states or other states there are local inspection fees.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

Prices in Effect April 22, 1929

S. O. NEW YORK

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
New York City	17	0	17	*19	15
Albany, N. Y.	13	0	13	14	15
Buffalo, N. Y.	14	0	14	15	14
Rochester, N. Y.	14	0	14	15	13
Syracuse, N. Y.	14	0	14	15	12
Boston, Mass.	16	2	18	20	15
Augusta, Me.	16	4	20	22	15
Manchester, N. H.	16	4	20	22	15
Burlington, Vt.	16	4	20	22	15

Note: S. O. New York allows concessions of 1 to 2c per gal. to dealers under posted tank wagon prices.

*The Standard of New York does not operate stations in New York City. This figure is the retail price of a principal station operator in New York selling Socony gasoline.

ATLANTIC REFINING

Pittsburgh, Pa.	†16	*	†16	21	14
Philadelphia, Pa.	†16	*	†16	21	14
Allentown, Pa.	†16	*	†16	21	14
Erie, Pa.	†13	*	†13	18	14
Scranton, Pa.	†16	*	†16	21	14
Altoona, Pa.	†16	*	†16	21	14
Dover, Del.	†16	3	†19	21	14
Wilmington, Del.	†16	3	†19	21	14
Boston, Mass.	16	2	18	20	15
Springfield, Mass.	16	2	18	20	15
Worcester, Mass.	16	2	18	20	15
Fall River, Mass.	14	2	16	17	15
Providence, R. I.	13	2	15	16	15
Hartford, Conn.	16	2	18	20	14
New Haven, Conn.	15	2	17	18	15
Atlantic City, N. J.	16	2	18	20	13
Camden, N. J.	16	2	18	20	13
Trenton, N. J.	16	2	18	20	13
Annapolis, Md.	16	4	20	22	13
Baltimore, Md.	16	4	20	22	13
Hagerstown, Md.	16	4	20	22	13
Richmond, Va.	16	5	21	23	13
Wilmington, N. C.	16	4	20	22	13
Brunswick, Ga.	17	4	21	23	**16.5
Jacksonville, Fla.	17	5	22	24	14.5

*3-cent state tax is collected by retail dealer and paid by him directly to state.

†The Atlantic Refg Co. recognizes a 2c a gal. discount from its posted tank wagon market on sales to dealers for purposes of resale.

The company also recognizes a maximum discount of 2c per gallon to commercial accounts under contract for one year.

**Georgia kerosene prices include 1c state tax.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	14.7	16.2	18
Detroit	16.4	17.9	19.7
Kansas City	†14.9	†16.4	†18.2
Milwaukee	15.4	*18.9	*20.7
Minneapolis	*18.7	*20.2	*22
St. Louis	14.6	16.1	17.9
New York		17	23
Boston		19	23

*Includes 2c state tax. †Includes 1c city tax.

Petroleum Spirits

Tank Cars (Solvent)	
New York refineries	11.00
New England refineries	11.00
Philadelphia refineries	11.00
Tank Wagon or Steel Barrels	
New York City	17
New England	19
New Jersey	16
Pennsylvania	16-18

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

	Gasoline T.W.	Tax	T.W.	S.S.	Oil T.W.
ONTARIO					
Toronto	19.5	5	24.5	28	21
Ottawa	15.5	5	20.5	24	21
Cochrane	24.5	5	29.5	..	26
Ft. William	22.5	5	27.5	31	22.5
MANITOBA					
Winnipeg	21.5	3	24.5	28	21.5
SASKATCHEWAN					
Regina	26	3	29	33	26
ALBERTA					
Edmonton	27.5	3	30.5	34	27.5
Calgary	23.5	3	26.5	30	23.5
BRITISH COLUMBIA					
Vancouver	22	3	25	29	23
QUEBEC					
Montreal	19.5	5	24.5	28	22
Quebec City	21.5	5	26.5	30	23
Three Rivers	21.5	5	26.5	30	23
NEW BRUNSWICK					
St. John	24	5	29	33	25
Moncton	24	5	29	33	25
NOVA SCOTIA					
Halifax	24	5	29	33	25
Sydney	24	5	29	33	25
PRINCE EDWARD ISLAND					
Charlottetown	24	5	29	33	25

Note: In districts surrounding these points 1c additional is added to city price.

"from Any Field"

WE CAN furnish you any product of petroleum, from any field and in any quantity from a single drum to a train load at prices which will save you money. You'll find a decided advantage in buying all your petroleum requirements from one reliable source. May we quote you on your next purchase of

GASOLINE KEROSENE NAPTHA
FURNACE OIL FUEL OIL MOTOR OILS
PETROLATUMS WAX CYLINDER STOCKS
SPECIALISTS IN NATURAL GASOLINE

Long Distance or a Wire or a Letter

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Incorporated

Warren, Penna.

Union Oil Company of Pennsylvania, Canada Div., Ltd.
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A NEW BARREL PUMP

Good-Looking
Well-Built
Low Price

A NEW and real good barrel pump by Gilbert & Barker at a remarkably low price. Soundly built—it should give years of dependable every-day service. Attractive and thoroughly modern in design. Fits any barrel with 1½" to 2" opening. Also available with swing return tube. Immediate shipment can be made from conveniently located warehouses. Write for prices.

GILBERT AND BARKER
MANUFACTURING COMPANY
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In every range of temperature —

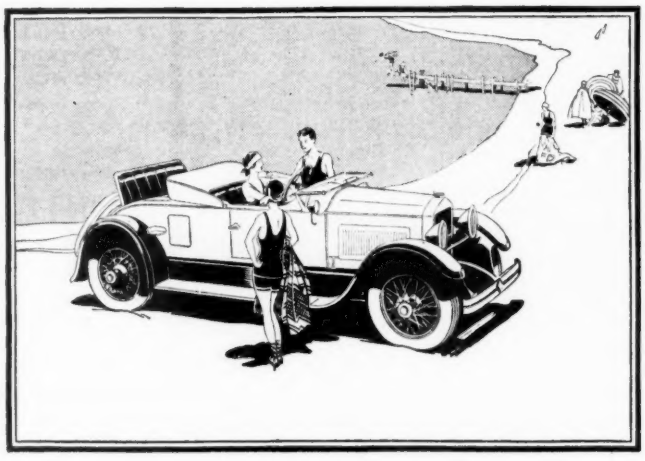
GRAIGRENE

[PRONOUNCED GREY-GREEN]

...gives perfect lubrication for transmission and differential

In Cold Weather

Gears are never hard to shift when the mercury tumbles — if Graigrene is in the transmission and differential. Graigrene never leaves gears unprotected, never freezes up, never channels out. It flows freely *all the time.*



In Hot Weather

Graigrene is NOT sluggish. It provides a thin, tough protective ribbon of oil between all metal surfaces, even in the hottest summer time. It does not break down under terrific touring heats. It protects gears *always.*

COLD TEST		POUR TEST	VISCOSITY AT 210°
000	60° below zero	30° to 35° below zero	272 seconds
00	30° below zero	zero	467 seconds
0	zero cold test		825 seconds
1	Summer		1800 seconds
2	Summer		2500 seconds

There is a grade of Graigrene for every car and every purpose

Manufactured by

Viscosity Oil Company

Established 1894

W. D. SIMMONS, President

Central Manufacturing District, CHICAGO

Phone Yards 7196

Crude Oil Prices (in Effect April 22, 1929)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Penna. Grade Oil in New York Transit Lines (Alleghany, N. Y. District)	$4.10
Bradford District Oil in National Transit Lines (Bradford District)	4.10
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	4.00
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	4.00
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	3.90
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	3.85
Cabell Grade in Eureka Pipe Lines (West Virginia)	1.35
Corning Grade in Buckeye Pipe Lines (Ohio)	1.75
Corning, O., heavy grade	1.65
Somerset Oil in Cumberland Pipe Lines (Kentucky)	1.50
Ragland Grade in Cumberland Pipe Lines (Kentucky)	$0.60

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines	$1.55

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective Jan. 25, 1929

Wooster(Oct. 17)*	$1.62	Princeton	$1.45
Lima	1.50	Illinois	1.45
Waterloo	1.20	Plymouth	1.18
Indiana	1.27	West Kentucky	1.53

*Wooster crude run prior to Oct. 17, 1928, takes price of $1.52.

Pure Oil Co.

Midland, Midland County, Michigan	$1.50

CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Petrolia	$1.90
Oil Springs	1.97

OKLAHOMA, KANSAS and NORTH TEXAS

Prices of Prairie Oil & Gas Co.

(In Oklahoma, Kansas, North and East Central Texas)

Effective Jan. 25, 1929

Below 25	$0.60	35-35.9	$1.17
25-25.9	0.66	36-36.9	1.20
26-26.9	0.72	37-37.9	1.23
27-27.9	0.78	38-38.9	1.26
28-28.9	0.84	39-39.9	1.29
29-29.9	0.90	40-40.9	1.32
30-30.9	0.96	41-41.9	1.35
31-31.9	1.02	42-42.9	1.38
32-32.9	1.08	43-43.9	1.41
33-33.9	1.11	44 and above	1.44
34-34.9	1.14		

Humble Oil & Refining Co. Prices

(Ranger, North Texas, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

Jan. 24, 1929, same schedule as Prairie in above fields.

Mirando, Tex.	$0.80
Salt Flat, Tex.	1.00

Magnolia Petroleum Co.

(In Oklahoma, Kansas and North and East Central Texas)

Jan. 25, 1929, Magnolia posted in above fields and in Panola Co., same schedule as Prairie, except these grades:

Below 26	$0.60	29-29.9	$0.80
26-26.9	0.65	30-30.9	0.90
27-27.9	0.70	31-31.9	1.00
28-28.9	0.75		

Glasscock, Crane, Upton, Winkler Counties	0.65
Chalkfield (Howard Co.)	0.65
Iatan district	0.93
Corsicana heavy	0.80
Luling	0.80

Carter Oil Co.

(Oklahoma and Kansas)

Jan. 24, 1929, same schedule as Prairie except Carter does not post oil below 25.

PANHANDLE, TEXAS

Humble Oil & Refining Co.

Effective Jan. 24, 1929

Hutchinson and Carson Counties:

Below 32	$0.72	38-38.9	$0.96
32-32.9	0.78	39-39.9	0.99
33-33.9	0.81	40-40.9	1.02
34-34.9	0.84	41-41.9	1.05
35-35.9	0.87	42-42.9	1.08
36-36.9	0.90	43-43.9	1.11
37-37.9	0.93	44 and above	1.14

Wheeler County:

Below 30	$0.70	37-37.9	$1.03
30-30.9	0.76	38-38.9	1.06
31-31.9	0.82	39-39.9	1.09
32-32.9	0.88	40-40.9	1.12
33-33.9	0.91	41-41.9	1.15
34-34.9	0.94	42-42.9	1.18
35-35.9	0.97	43-43.9	1.21
36-36.9	1.00	44 and above	1.24

Gray County:

Below 29	$0.69	37-37.9	$1.08
29-29.9	0.75	38-38.9	1.11
30-30.9	0.81	39-39.9	1.14
31-31.9	0.87	40-40.9	1.17
32-32.9	0.93	41-41.9	1.20
33-33.9	0.96	42-42.9	1.23
34-34.9	0.99	43-43.9	1.26
35-35.9	1.02	44 and above	1.29
36-36.9	1.05		

WEST TEXAS

Humble Oil & Refining Co.

Effective July 26, 1928

Winkler, Crane, Upton, Crockett, Howard and Pecos Counties	$0.65

NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto and **Cotton Valley.

Effective Jan. 26, 1929

Below 28	$0.78	36-36.9	$1.20
28-28.9	0.84	37-37.9	1.23
29-29.9	0.90	38-38.9	1.26
30-30.9	0.96	39-39.9	1.29
31-31.9	1.02	40-40.9	1.32
32-32.9	1.08	41-41.9	1.35
33-33.9	1.11	42-42.9	1.38
34-34.9	1.14	43-43.9	1.41
35-35.9	1.17	44 and above	1.44

**Cotton Valley, below 36, $0.75. Beginning with 36-36.9, same schedule as above.

Smackover, below 24	$0.75
do 24 and above	0.90
Bellevue	1.20
*Urania, La.	1.00
†East El Dorado	0.75

*Posted by Louisiana Oil Refining Corp.

†Posted by Magnolia Petroleum Co.

Jan. 25, The Texas Co. same schedule in Louisiana as Standard, plus these grades: 24-24.9, $0.60; 25-25.9, $0.66; 26-26.9, $0.72; 27-27.9, $0.78.

Jan. 26, Magnolia Petroleum met Standard schedule in Louisiana-Arkansas fields.

STEPHENS, ARKANSAS

Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective Jan. 28, 1929

Below 28	$0.70	30-30.9	$0.82
28-28.9	0.74	31-31.9	0.86
29-29.9	0.78	32 and above	0.90

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective Jan. 26, 1929

Grades A	$1.20	29-29.9	$1.15
Grades B:		30-30.9	1.17
Below 25	1.05	31-31.9	1.19
25-25.9	1.07	32-32.9	1.21
26-26.9	1.09	33-33.9	1.23
27-27.9	1.11	34-34.9	1.25
28-28.9	1.13	35 and above	1.27

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Pierce Junction, Sugarland and Raccoon Bend. All other fields are Grades A only

"Gas" Tax Deductible From Income

WASHINGTON, April 19.—Seemingly every man who pays a gasoline tax is entitled to deduct the amount so paid from his income when he makes his income tax return to the federal government. The Bureau of Internal Revenue has held that the gasoline tax, of two cents per gallon, in Michigan, is deductible in computing the federal income tax.

The Bureau said that it appeared from the language of the Michigan statute that the tax was imposed upon the owners or drivers of motor vehicles operated on the highways of the state, and not upon the gasoline distributors, as such. The statute plainly says the intent thereof is to impose a tax upon the owners of such motor vehicles for the privilege of using motors upon the highways, and that the tax is to be in addition to the general license tax. The bureau said that if the tax were added to or made a part of business expenses of such owners or drivers it could not be separately deducted as a tax.

In other words the drivers of so-called pleasure cars, seem to be entitled to deduct about $12 a year from their income tax returns on account of gasoline taxes paid where the tax is two cents a gallon, and the driving runs something over 1,000 miles per month in a 4,000 pound car.

Crude Price Changes

SHREVEPORT—On April 22 Louisiana Oil Refining Corp. advanced price of Urania, La. crude 10 cents, making new price $1 per barrel.

Oil Exports Reach New Heights in 1928

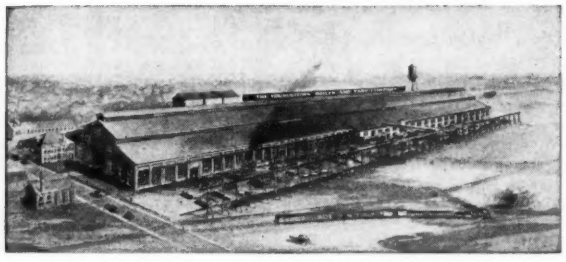
WASHINGTON, April 19.—Exports of crude, gasoline and lube oils established new peaks during 1928, a summary of American export trade by the U. S. Chamber of Commerce reveals.

Crude shipments abroad totaled 18,961,000 barrels, by far the largest amount ever exported.

Gasoline shipments were 51,757,000 barrels, 19.4 per cent more than in 1927, and 57 per cent above the 1923-1927 average exports. These shipments include also naphtha and other finished light products.

Another record was set in lubricating oil exports in 1928, which totaled 10,850,000 barrels, or 12.9 per cent more than in 1927, and 18.6 per cent more than the 1923-1927 average. Prices were lower.

Youngstown
"KEENE TANKS MADE"
STANDARDIZED
REG. U.S. PAT. OFF.



THERE'S A REASON

And mister it's not grape nuts—no siree—there is a reason, we repeat, why considerably over thirty million dollars worth of Youngstown Tanks are giving satisfactory service in this and foreign lands. Thirty million is a lot of money and furthermore it represents a lot of tanks and a lot of tank buyers—soft buyers, cranky buyers, show-me buyers, every kind of buyer that has ever harassed a manufacturer. Yet we keep them satisfied, year after year, in multiplying millions. Yes siree there is a reason.

Write for free copy of Bulletin 15

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Trucks

and trailers—their operation and maintenance—how they lower oil transportation costs—23 articles have been devoted exclusively to truck operation in the oil industry in past issues of National Petroleum News. They are listed here for your file reference:

1929

Trucks 1,000,000 gals. gasoline per month from 1 bulk station — March 20, p. 114
Trucks speeding cause accidents — Jan. 30, p. 45

1928

Tank truck possibilities revealed — Dec. 5, p. 125
Economical truck operation thru cost accounting — Dec. 5, p. 129
N. Y. tank truck monopoly causes suit — Dec. 5, p. 23
Tank Trucks for town and country — Oct. 17, p. 195
Truck tank monopoly in New York — Oct. 10, p. 24
Truck trains transport gasoline cheaper — Oct. 10, p. 68
Truck and water transportation exceed rail — Sept. 26, p. 94
N. Y. truck tank prices caused by politics — July 4, p. 23
Fast truck features power unloader — July 4, p. 63
Trucks cut gasoline transportation costs — June 27, p. 69
Truck hauling permitted in most states — Apr. 18, p. 27
Truck shipping is new era for oil transportation — Apr. 11, p. 28; Apr. 4, p. 25; Mar. 28, p. 28; Mar. 14, p. 27

1927

Developing driver for cheaper transportation — Dec. 14, p. 70
Truck trailers haul carload of gasoline — Nov. 23, p. 26
Lowering transportation costs with trucks — Oct. 26, p. 27

1926

Tank trailers provide economical hauling — June 23, p. 116
Truck hauling cheaper than rail — May 26, p. 51
Truck driver as salesman — March 17, p. 55

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National Petroleum News

Main Office: 1213 West Third St.
Cleveland, Ohio

Crude Oil Prices (in Effect April 22, 1929)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

GULF COASTAL

Prices of The Texas Co.

Effective March 14, 1927

Grades A	$1.20	*Grades B	$1.15
‡Grades B (light crude):			
35-35.9	$1.37	38-38.9	$1.43
36-36.9	1.39	39-39.9	1.45
37-37.9	1.41	40 and above	1.47

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on all below 35° is same as Humble's postings on Grades B.

ROCKY MOUNTAIN FIELDS

Prices of Ohio Oil Co., and Midwest Refining Co.

(Salt Creek prices effective Jan. 25, 1929)

‡Salt Creek 29-29.9	$0.90
" " 30-30.9	0.96
" " 31-31.9	1.02
" " 32-32.9	1.08
" " 33-33.9	1.11
" " 34-34.9	1.14
" " 35-35.9	1.17
" " 36-36.9	1.20
" " 37 and above	1.23
Elk Basin	1.36
Grass Creek light	1.36
Big Muddy	$1.28
Lance Creek	1.38
Rock Creek	1.18
Mule Creek	1.10
Rex Lake	1.10
‡Osage	1.38
‡Cat Creek, Mont.	1.48
Sunburst, Mont.	1.65
‡Hogback, N. Mex.	1.53
Artesia, N. Mex.	1.08

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

CALIFORNIA

***Standard Oil Co. of California**

Gravity	Signal Hill Seal Beach Alamitos Heights Huntington Beach	Inglewood Torrance	Olinda-Brea Canon Richfield	Athens-Rosecrans Dominguez	Elwood Terrace	Whittier La Habra	Coyote Hills	Santa Fe Springs	Newhall McKittrick †Kern River	Midway Sunset Buena Vista & Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Montebello	Kettleman Hills	*Santa Maria (Orcutt)	*Ventura
14-14.9	$ .70	$ .70	$ .70	....	....	$ .70	$ .70	....	$ .50	$ .50	$ .50	$ .50	$ .50	$ .70	....	$ .65	$ .70
15-15.9	.70	.70	.70	....	....	.70	.70	....	.50	.50	.50	.50	.50	.70	....	.65	.70
16-16.9	.70	.70	.70	....	....	.70	.70	....	.50	.50	.50	.50	.50	.70	....	.65	.70
17-17.9	.70	.70	.70	....	....	.70	.70	....	.50	.50	.50	.50	.50	.70	....	.65	.70
18-18.9	.75	.75	.75	....	....	.75	.75	....	.50	.56	.56	.56	.56	.70	....	.70	.75
19-19.9	.80	.80	.80	....	....	.80	.80	....	.50	.62	.62	.62	.62	.75	$1.65	.70	.80
20-20.9	.85	.85	.85	....	....	.84	.84	....	....	.68	.68	.68	.68	.80	for	.70	.85
21-21.9	.89	.89	.89	....	....	.88	.88	.89	....	.74	.74	.74	.74	.85	55°	.86	.86
22-22.9	.93	.93	.93	....	....	.91	.91	.92	....	.80	.80	.80	.80	.90	gravity	.87	.87
23-23.9	.97	.97	.97	....	....	....	.94	.95	....	.85	.85	.85	.85	.95	and	.90	.90
24-24.9	1.01	1.01	1.01	1.01	....	....	.97	.98	....	.90	.90	.88	.88	.98	over	.94	.94
25-25.9	1.05	1.05	1.05	1.05	....	....	1.00	1.01	....	.95	.95	.91	.91	1.01	....	.98	.98
26-26.9	1.09	1.09	1.09	1.09	....	....	1.04	1.04	....	1.00	1.00	.94	.94	1.04	....	1.02	1.02
27-27.9	1.13	1.13	1.13	1.13	....	....	1.08	1.07	....	1.05	1.05	.98	.97	1.07	....	....	1.06
28-28.9	1.17	1.17	1.17	1.17	....	....	1.12	1.10	....	1.10	1.10	1.02	....	1.10	....	....	1.10
29-29.9	1.21	....	1.21	1.21	....	....	1.16	1.15	....	1.16	1.16	1.06	....	1.13	....	....	1.14
30-30.9	1.25	....	1.25	1.25	....	....	1.20	1.20	....	1.22	1.22	1.10	....	1.16	....	....	1.18
31-31.9	1.30	....	....	1.30	....	....	....	1.25	....	1.28	1.28	1.14	....	....	....	....	1.23
32-32.9	1.35	....	....	1.35	....	....	....	1.30	....	1.34	1.34	1.18	....	....	....	....	1.28
33-33.9	....	....	....	1.41	....	....	....	1.35	....	1.40	.140	1.22	....	....	....	....	1.34
34-34.9	....	....	....	1.47	$1.16	....	....	1.40	....	....	1.46	1.26	....	....	....	....	....
35-35.9	....	....	....	1.53	1.22	....	....	1.45	....	....	....	1.30	....	....	....	....	....
36-36.9	....	....	....	1.59	1.28	....	....	1.50	....	....	....	....	....	....	....	....	....
37-37.9	....	....	....	1.65	1.34	....	....	1.55	....	....	....	....	....	....	....	....	....
38-38.9	....	....	....	1.71	1.40	....	....	1.60	....	....	....	....	....	....	....	....	....
39-39.9	....	....	....	1.77	1.46	....	....	1.65	....	....	....	....	....	....	....	....	....
40-40.9	....	....	....	1.83	1.52	....	....	....	....	....	....	....	....	....	....	....	....
41-41.9	....	....	....	1.89	1.58	....	....	....	....	....	....	....	....	....	....	....	....
42-42.9	....	....	....	1.95	1.64	....	....	....	....	....	....	....	....	....	....	....	....

*Santa Maria and Ventura postings are by Union Oil Co. Union Oil Co. posts same prices in all above fields as Standard except it does not post prices in Wheeler Ridge, Whittier, La Habra, Newhall and Kettleman Hills. Standard does not contract for crude testing 11-13.9 gravity, but pays 45c a barrel when purchased.

†Kern River down to 12° gravity is 50c; 11-11.9 is 45c.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	April 22	April 15
Soda Ash light 58% bags, cwt.	$1.32	$1.32
Silicate of Soda 60 deg. drums, cwt.	$1.55	$1.55
Silicate of Soda 40 deg. tank cars, cwt.	$0.60	$0.60
Silicate of Soda 40 deg. drums cwt.	$0.80	$0.80
Sal Soda wks.	$0.90-1.00	$0.90-1.00
Caustic Soda 76% solid, cwt.	$2.90	$2.90
Sulfuric Acid 60 deg. tank cars, f.o.b. shipping point per ton	$11.00	$11.00-12.50
Oleum 20%, fuming sulfuric, tank cars, wks.	$18.50	$18.50
Sulfur, flowers of, cwt.	$3.50-4.50	$3.50-4.50
Liquid Chlorine, tank cars, wks, lb.	3.50-5.00	3.50-5.00

Compounders' Supplies

	April 22	April 15
Vegetable Oils		
Linseed carloads, spot, lb.	10.20	10.20
Tanks, spot	9.30	9.30
Soya Bean, Tanks, coast, lb.	9.50	9.50
Oleic Acid		
Distilled, tanks, lb.	10.25	10.25
Distilled, bbls, lb.	11.125	11.125
Saponified, tanks, lb.	10.50	10.50
Saponified, bbls, lb.	11.375	11.375
Lard Oils		
Prime Winter Strained, lb.	15.25	15.25
Extra Winter Strained, lb.	13.375	13.375
Extra, lb.	13.125	13.125
Extra No. 1, lb.	12.875	12.875
No. 1, lb.	12.625	12.625
No. 2, lb.	12.375	12.375
Tallow oil, lb.	11.25	11.25
Neatsfoot Oil		
Pure, bbls, lb.	14.75	14.75
Extra, bbls, lb.	13.00	13.00
No. 1 bbls, lb.	12.75	12.75
Cold Pressed, lb.	18.75	18.75
Fish Oils		
Menhaden Oil		
Light Pressed, gal.	71	71
Light Pressed, tank cars, N.Y., gal.	65	65
White bleached, gal.	77	77
Yellow bleached, gal.	73	73
Whale, extra winter bleached, gal.	82	82
Naval Stores		
Steam distilled turpentine, N. Y., gal.	50	52
Steam distilled turpentine, Savannah, gal.	47	47
Gum turpentine, N. Y., gal.	56	56
Gum turpentine, f.o.b. cars Savannah, gal.	49.50	51
Wood Rosin F, N. Y., bbl.	$7.40	$7.40
Wood Rosin F, Savn'h, bbl.	$7.20	$6.60
Gum Rosin B, N. Y., bbl.	$7.60	$7.60
Gum Rosin B, f.o.b. cars Savannah, bbl.	$6.90	$6.90
Rosin oil, pure, gal.	61	61
Rosin oil, compounded, gal.	51	51
Pine Tar		
Kiln burnt, bbl.	$13.00-14.00	$13.00-14.00
Retort, bbl.	$13.50-14.50	$13.50-14.50
Alcohol		
Denatured Formula 5, in bbls., per gal.	55-62	55-62

Illinois Pipe Line May Split Stock

NEW YORK, April 20.—There are rumors here that the stock of the Illinois Pipe Line Co. may shortly be split. The company's capital consists of 200,000 $100 par shares which have been selling lately in excess of $300 a share on the New York Curb Market.

The company is one of the most active in the group of former Standard Oil pipe line units. Besides operating lines in Illinois, Indiana, Ohio, Wyoming, Montana and New Mexico, the company has a 136-mile line from the Yates pool in Texas to Del Rio on the Southern Pacific. The company also has lines from other pools in West Texas.

During the first three months this year the company made pipe line deliveries totaling 2,714,097 barrels, compared with 2,674,535 barrels in the same period last year.

Illinois Pipe submits only a balance sheet. Additions to surplus account in 1928 amounted to $5.68 a share, which with dividends of $16 a share paid during the year indicated earnings of $21.68 a share on the 200,000 shares outstanding against $19.06 for 1927 figured on the same basis.

Financial Notes

Cities Service Co.—Steady growth in earnings reported. Net after interest but before reserves in 12 months ended March 31 was $30,220,492, compared with $29,313,581 in preceding 12 months.

Galena Signal Oil Co.—Venango county, Pa., court holds in stockholder's suit that sale of part of assets to The Texas Co. and plan to transfer other assets to the new Galena Oil Co. of Delaware are legal.

Imperial Oil and International Petroleum Co.—Stockholders approve 4-for-1 split in Imperial stock and 2-for-1 split in International stock.

New York Transit Co.—Stockholders vote for reduction in capital stock from 50,000 $100 shares to 100,000 $10 shares. President D. S. Bushnell has written stockholders that it is impossible to tell how much more than $50 a share stock reduction dividend can be paid until after the government approves its 1928 income tax report. An audit of the report is expected to be completed soon.

Pennok Oil Corp.—Thomas W. Streeter, Edward Cornell, O. L. Gubelman and Edward T. Moore elected directors of Pennok. These men with Thomas J. Megear, Ernest Stauffen, Jr., and John L. Weeks, constitute the executive committee of Simms Petroleum Co. with which Pennok is being merged.

Phillips Petroleum Co.—John G. Phillips of Bartlesville and Charles A. Lemp of St. Louis were elected directors at the annual meeting to fill vacancies. L. E. Phillips was elected chairman of the executive committee. John H. Kane, executive vice president, Clyde Alexander, vice president and general manager, P. J. McIntyre, J. S. Dewat and J. M. Sands were elected new vice presidents. Other officers were re-elected.

Standard Oil Co. of New Jersey—H. G. Seidel, in charge of European production, and Orville Harden, head of the co-ordination department, were elected directors, increasing the board to 19 members.

George B. Davies

New Sales Head of Dayton Oil Company

DAYTON, O., April 19.—George B. Davies, who has been in the wholesale oil marketing business for many years, has been made sales manager of The Refiners Oil Sales Co., Dayton, Ohio. Mr. Davies' latest connection was with the Louisiana Oil Refining Corp., Shreveport, La., as manager of its wholesale sales department.

He succeeds Arza E. Millard who has been promoted to general sales manager for both the Refiners Oil Co. and the Refiners Oil Sales Co., both at Dayton.

Starting his oil career with the brokerage firm of Anderson & Gustafson, Chicago, Mr. Davies was a year later sent to open an office at Atlanta, Ga. for this firm. He was in charge in Atlanta until 1921, when he formed the partnership of Moore & Davies Oil Co., Atlanta, of which W. L. Moore was the other partner. This partnership was sold a few years later to Wofford Oil Co., Atlanta, after which Mr. Davies went with the Louisiana Oil Refining Corp.

Marland Announces Capital Plans

NEW YORK, April 18.—The capital structure of the E. W. Marland Co., Inc., the new producing corporation of E. W. Marland, will consist of 250,000 Class A and 250,000 Class B no par stock.

The Class A shares are to be sold for cash to provide working capital, something more than one-fourth of the total having been subscribed for by E. W. Marland and associates. The Class B shares have been set aside for payment of salaries of officers and employes. Provision is made that until dividends aggregating $10 a share shall have been paid or set aside for payment on Class A stock, the Class B shares do not participate in dividends. After that both share alike in dividends.

Officers of the new company are E. W. Marland, Chairman; C. C. Brown, president; A. W. McCoy, vice president; I. G. Harmon, vice president and treasurer; H. L. McCracken, secretary, and H. R. Kent assistant secretary and assistant treasurer.

General Asphalt Plans Charter Changes

PHILADELPHIA, April 20.—Changes in the certificate of incorporation of the General Asphalt Co. are to be voted on at the annual meeting of the company April 24.

At present it is provided property of the corporation cannot be sold nor lien placed on it except with assent of holders of three-fourths of outstanding capital stock, nor can unsecured indebtedness be created in excess of 15 per cent of par value of capital stock outstanding without consent of holders of majority of outstanding stock. Amendments proposed would provide that such action may be taken if approved by like majorities of stock represented at stockholders' meeting.

Amendments were proposed in view of difficulty of securing stock representation at meetings as result of Stock Exchange regulations relating to proxies. Stockholders at last annual meeting approved amendment to by-laws by which stock represented at meeting shall constitute a quorum instead of the previous requirement of majority stock representation.

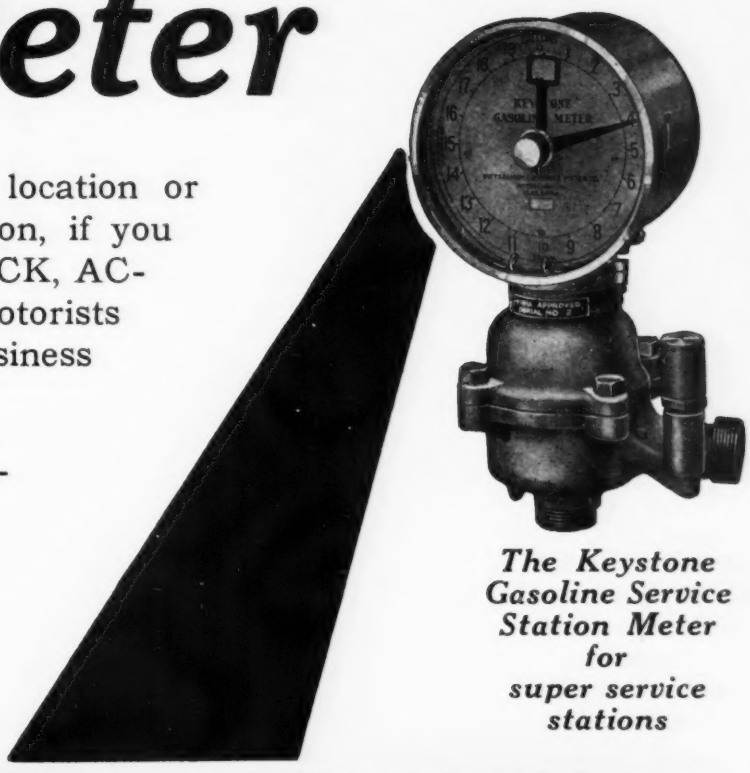
Another amendment permits holding of stockholders' meetings in Philadelphia instead of at company's statutory office in New Jersey.

TULSA, April 20.—Mr. and Mrs. M. E. Foster of Bartlesville are the parents of a nine pound boy born April 15. Mr. Foster is assistant to H. A. Trower, in charge of marketing for the Phillips Petroleum Co. The youngster has been named Thomas Kent.

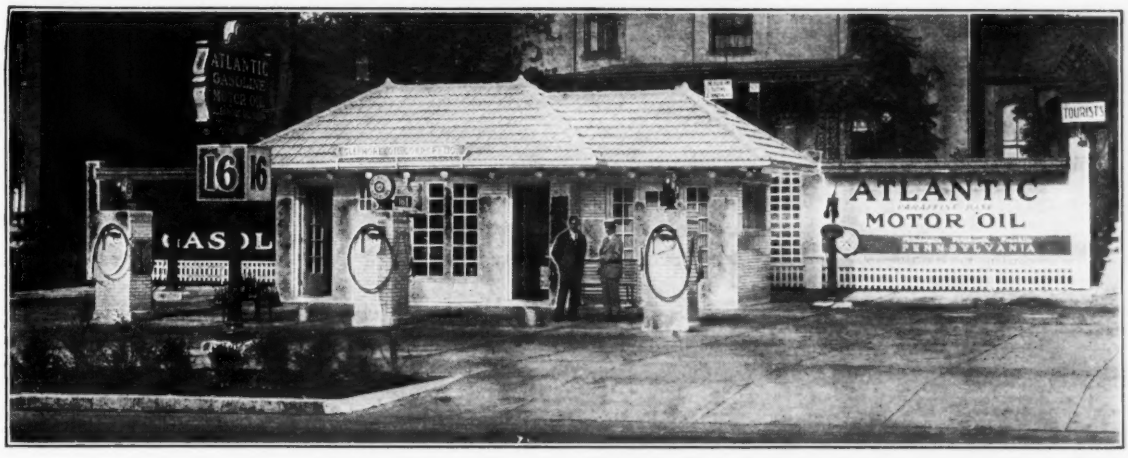
It all depends on the Meter

NO matter how fine your location or how attractive your station, if you are not prepared to give QUICK, ACCURATE SERVICE to motorists you will not establish a business built up by steady customers.

Keystone Gasoline Service Station Meters for super service stations, are the answer to the questions, How Quick, How Accurate?



The Keystone Gasoline Service Station Meter for super service stations



PITTSBURGH EQUITABLE METER COMPANY

MAIN OFFICE AND WORKS PITTSBURGH, PA.

		BRANCH OFFICES		
1433 MAIN ST. COLUMBIA, S.C.	525-16th AVE. NORTH SEATTLE, WASH		331 RIO GRANDE AVE. SALT LAKE CITY, UTAH	MUTUAL BLDG. KANSAS CITY, MO.
REPUBLIC BANK BLDG. DALLAS, TEXAS	50 CHURCH ST. NEW YORK, N.Y.	UNION BANK BLDG. LOS ANGELES, CALIF.	KENNEDY BLDG. TULSA, OKLA.	PEOPLES GAS BLDG. CHICAGO, ILL.

Transactions in Oil Shares on New York Stock Exchange

1928 High	1928 Low	1929 High	1929 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended April 20 Sales	First	High	Low	Last	Change
43⅞	27⅛	42⅝	30⅛	(sh) 922,075	N.P.	Amerada Corp	50cQ	Jan. 31, 29	10,500	34⅜	34⅜	32⅛	34	+ ¼
85	51¼	64¾	44	(sh) 209,180	N.P.	American Republics Corp	....	.....	9,900	59⅞	60½	57	58⅜	— 1¼
53⅜	37½	47¼	43	$56,000,000	$25	Associated Oil	50cQ	Mar. 31, 29	170	45	46	45	46	+ 2¾
62½	50	68	53½	50,000,000	25	Atlantic Refining	‡25cQ	Mar. 15, 29	255,000	57⅝	61¼	57⅜	60½	+ 2¼
118¼	114½	117⅝	115	20,000,000	100	do pfd	$1.75Q	Feb. 1, 29	360	114	115	114	115	+ 1¼
53	20	46⅞	38⅛	47,261,125	25	Barnsdall Corp. A	50cQ	Feb. 5, 29	69,800	45⅜	45⅜	43⅞	44½	— ½
51⅛	20	49	38⅛	300,525	25	do B	50cQ	Feb. 5, 29	400	43⅛	43⅛	43⅛	43⅛	+ ⅛
24½	12¼	28½	20	(sh) 956,075	N.P.	Beacon Oil	....	.....	6,600	23⅜	23⅜	22⅞	23	— ¼
36	25¼	30	26¾	$51,524,150	$25	California Petroleum	....	Jan. 1, 29	10	30	30	30	30	0
94⅞	68	81¼	63	21,031,400	100	General Asphalt	....	.....	52,300	73⅜	78½	73⅛	76	+ 3½
141	110⅜	120¼	104½	6,628,200	100	do pfd	$1.25Q	Mar. 1, 29	4,800	113⅞	119½	113¾	119½	+ 6½
167	79	107	80⅛	25,000,000	100	Houston Oil	....	.....	95,900	102⅞	104⅞	99¾	102½	— ½
38⅜	21¾	38⅜	30	(sh) 1,333,157	N.P.	Independent Oil & Gas	37½cQ	Jan. 31, 29	147,200	35¾	*38⅜	34⅜	38¼	+ 2⅞
39⅝	9	52⅝	29	$4,299,190	$10	Indian Refining	....	Dec. 15, 20	88,900	50⅞	51	46½	47⅝	— 3¼
37¼	8½	48¾	28	4,550,110	10	do ctfs	....	.....	61,000	48⅜	48¾	44¼	45¾	— 2¾
185	140	165	160	1,977,700	100	do pfd. new	$1.75Q	Apr. 1, 29	.....	.....	.....	.....	.....	.....
39⅛	27⅜	33½	26¼	3,992,387	N.P.	Lago Oil & Transport	....	May 2, 27	13,000	32½	*33½	31¼	31½	— ⅛
19¾	9⅜	18	12¾	(sh) 1,187,298	N.P.	Louisiana Oil Refining	....	.....	14,000	15⅛	15½	14⅝	15⅛	— ¼
96	78	100	89	$4,000,000	$100	do pfd	$1.½Q	Feb. 15, 29	50	89	90½	89	90½	+ 1½
25½	12½	18½	12	(sh) 330,000	N.P.	Maracaibo Oil	....	.....	7,300	15	*18½	15	17	+ 3
49¾	33	47⅛	35⅞	(sh) 2,316,897	N.P.	Marland Oil Co	....	Mar. 31, 27	55,600	42⅜	43¼	41⅛	41¾	— ¾
360	250	275	226	$45,942,800	$100	Mexican Petroleum	‡$3Q	Apr. 20, 29	.....	....	....	....	....	.....
...	...	...	...	12,000,000	100	do pfd	$2Q	Apr. 20, 29	.....	...	...	...	...	.....
73	4⅝	69⅜	41½	(sh) 995,500	N.P.	Mexican Seaboard	....	Nov. 15, 24	74,500	49¾	51⅜	48	49⅜	— ⅝
44½	25⅛	39⅞	30½	(sh) 1,857,461	N.P.	Mid-Continent	....	Aug. 1, 27	74,900	35	36⅞	34⅝	36¾	+ 1⅞
120½	103¼	121	120¼	$6,718,000	$100	do pfd	$1.75Q	Mar. 1, 29	.....	...	...	...	...	.....
7⅜	2⅜	5⅛	3¾	23,849,720	10	Middle States	....	July 1, 23	8,800	4½	4⅝	4¼	4¼	+ ⅛
5⅞	1½	3½	2¾	5,950,500	10	do ctfs	....	.....	5,400	2⅞	3⅛	2⅞	2⅞	0
2¼	1	1½	1	(sh) 3,500,000	N.P.	Pacific Oil	....	.....	11,500	1¼	1¼	1⅛	1⅛	— ⅛
55½	38¼	61½	41⅛	$50,000,000	$50	Pan American P. & T.	....	Oct. 20, 27	32,100	58¼	*62½	58	62½	+ 4
58⅞	37¾	65⅞	40½	121,101,400	50	do B	....	Oct. 20, 27	546,900	59⅞	*65⅞	59⅛	64½	+ 4½
28⅜	15½	17½	14⅛	(sh) 400,000	N.P.	Pan American Western B	....	Jan. 30, 27	700	14¾	15	14¾	15	0
21⅜	11½	15¼	9½	(sh) 199,370	N.P.	Panhandle P. & R	....	.....	3,800	13⅝	13⅞	13	13	— ⅝
106¼	70	76	47½	$2,935,200	$100	do pfd	....	July 2, 23	200	64	65	64	65	+ 3
53⅞	35¼	47	37¼	(sh) 2,406,803	N.P.	Phillips Petroleum	37½cQ	Apr. 1, 29	24,200	42¼	44⅜	41¾	44	+ 1⅞
5¼	½	3⅜	2¼	$29,622,925	$25	Pierce Oil	....	.....	6,400	3	3	2⅝	2⅝	— ⅜
50	16¼	51½	30	15,000,000	100	do pfd	....	Feb. 1, 22	500	48½	48½	46	46	— 2
6⅜	3½	5⅞	4⅜	(sh) 2,500,000	N.P.	Pierce Petroleum	....	.....	2,400	5	5	4⅞	5	+ ⅛
64⅝	59½	65⅝	58	$60,636,450	$25	Prairie Oil & Gas	....	Aug. 31, 27	8,400	61⅛	62⅞	60½	61	— ⅛
...	...	59	53⅜	101,250,000	25	Prairie Pipe Line	‡75cQ	Mar. 31, 29	5,900	56½	57	56⅞	56⅞	+ ⅜
29⅞	16	25⅞	18¼	37,450,850	50	Producers & Refiners	....	Sept. 15, 23	12,500	22¼	24⅜	22	22	0
49⅜	41	45¾	38⅛	2,845,350	50	do pfd	....	May 1, 25	310	44	45	43	43¾	+ ¾
31¾	19	28½	23½	75,959,250	25	Pure Oil Co	25cQ	Mar. 1, 29	39,100	26¾	28	26	27¾	+ 1½
119	108	115½	112	13,000,000	100	do 8% pfd	$2Q	Apr. 1, 29	210	114	114½	112½	113	0
56	23½	49⅝	40	47,127,725	25	Richfield Oil	50cQ	Feb. 15, 29	19,100	44	45¼	43¼	45	+ ¾
...	...	42½	33¾	(sh) 1,200,000	N.P.	Rio Grande Oil Co	‡$1S.A.	Jan. 25, 29	37,100	40	40¼	38⅜	38¾	— 1⅝
64	44⅜	55¾	31¾	(sh) 546,646	$13.40	Royal Dutch N. Y. shares	$1.336	Feb. 8, 29	2,900	52¾	54	52¼	52⅞	+ ½
57½	39⅜	55¾	43	(sh) 65,203,000	£2	Shell Transport & T	96.4c	Feb. 8, 29	100	46½	46½	46½	46½	0
39⅜	23¼	31¾	26	12,254,979	N.P.	Shell Union Oil	35cQ	Mar. 31, 29	148,100	30	31¼	29⅞	30¾	+ ¼
27¼	18⅛	26⅜	18¼	$8,357,280	$10	Simms Petroleum	40cQ	Mar. 15, 29	169,100	21⅞	*26⅜	21⅞	25¾	+ 3¾
46¾	17⅜	45	36	5,494,095	N.P.	Sinclair Consolidated	‡50cQ	Apr. 15, 29	516,100	38⅞	40½	38⅝	39¾	+ ½
110	102½	111	109	$16,025,200	$100	do pfd	$2Q	Feb. 15, 29	400	109¼	109½	109¼	109½	+ ½
42⅝	25	40½	32⅞	27,396,590	25	Skelly Oil Co	50cQ	Mar. 15, 29	219,900	41	46	40¼	45	+ 4¼
80	53	80⅞	64	(sh) 13,016,435	N.P.	S. O. California	62½cQ	Mar. 15, 29	148,100	78⅞	80⅜	78⅜	79	— 1¼
59¾	37¾	61½	48	$612,095,850	$25	S. O. New Jersey	‡25cQ	Mar. 15, 29	243,400	59⅜	60¾	58¾	60	+ ¼
45½	28¾	45¾	38⅝	434,094,575	25	S. O. New York	40cQ	Mar. 15, 29	161,900	44⅛	44⅝	43½	43⅝	— ⅜
77	31½	68½	57	(sh) 1,297,847	N.P.	Sun Oil	25cQ	Mar. 15, 29	2,900	64⅜	64⅜	62⅛	63½	— 1
110	100	105½	100	$5,000,000	$100	do pfd	$1.50Q	Mar. 1, 29	210	104	104	100⅜	103½	— ½
14¼	2½	12	7	(sh) 1,304,698	N.P.	Superior Oil Corp	....	Dec. 20, 20	197,400	9⅜	10¼	9	9½	0
74¾	50	68½	57¼	$211,082,925	$25	The Texas Corp	75cQ	Apr. 1, 29	104,100	66⅛	*68½	65¼	67¾	+ 1¾
26⅝	12⅛	23⅞	16¼	8,380,340	10	Texas Pacific Coal & Oil	2½%s	Mar. 20, 29	35,100	21⅜	21⅞	20⅝	21	— ½
41½	19⅜	38½	27⅛	(sh) 2,179,275	N.P.	Tide Water Oil Co	20cQ	Mar. 31, 29	4,700	33½	35½	33⅛	35½	+ 2½
100⅛	86¾	97½	90⅛	$20,321,000	$100	do 5½% pfd	$1.25Q	Feb. 15, 29	500	94⅜	94⅜	94	94	+ ⅜
25	14¾	22	17½	(sh) 4,877,976	N.P.	Tide Water Associated	....	Aug. 1, 27	48,100	20½	21½	20¼	20¾	+ ⅛
91¾	81⅞	90	86	$72,989,200	$100	do pfd	$1.50Q	Apr. 1, 29	9,400	86¼	88⅜	86¼	88⅜	+ 2⅜
14½	6¾	13	9	(sh) 3,842,029	N.P.	Transcontinental Oil	....	.....	149,300	11	11⅞	10⅝	11	+ ¼
58	42¾	54½	46	$40,858,375	$25	Union Oil of California	50cQ	Feb. 10, 29	96,800	51⅞	*54½	51¼	52½	+ ¾
128⅛	110	150¼	121⅞	31,101,200	100	Union Tank Car Co	$1.25Q	Mar. 1, 29	500	..	141	134	141	+ 7
44⅞	26	42⅞	32⅝	(sh) 488,359	N.P.	Warner Quinlan	50cQ	Apr. 2, 29	12,500	34¾	35	34	34¾	+ ⅛
38	20⅛	37⅞	30¼	(sh) 490,000	N.P.	White Eagle Oil & Refining	50cQ	Apr. 20, 29	5,700	35½	36⅞	35½	36½	+ ⅝
22⅜	17¼	29¾	19½	(sh) 428,967	N.P.	Wilcox Oil & Gas	....	May 10, 28	4,200	23	24½	23	23	0

*New High †New Low XEx-dividends ‡Also extras s-Stock Total Sales 4,089,120

Pittsburgh Stock Exchange

Transactions Week Ended April 19, 1929

	Sales	High	Low	Last	Change
†Ark. Nat. Gas	20,552	5⅜	5⅛	5⅜	+ ¼
do pfd	6,547	8⅛	8	8	— ⅛
Devonian Oil	100	6¼	6¼	6¼	+ ¼
Dixie Gas & Util.	5,525	16	12½	15	+2½
do pfd	100	75	70	75	+2
Lone Star Gas	4,140	70¼	68	69½	+1¼
‡Petroleum Explo.	54	32	32	32	—3
‡Salt Creek Con.	120	3¾	3½	3½	— ¾
Tidal Osage	200	16½	16	16½	+1½
‡Waverly Oil Wks.A	10	30	30	30	—5

†Ex-rights ‡New Low.

Financial Notes

Standard Oil Co. of New Jersey—German distributing subsidiary reports profit of 6,330,000 marks in 1928 as compared with 2,450,000 marks in 1927.

Texas Pacific Coal & Oil Co.—R. E. Harding elected a member of the executive committee.

If the present rate of increase is maintained, 1,500,000 airplanes will be in use in this country in seven years, is the estimate of Capt. L. M. Woolson, of the Packard Motor Car Co., in an address he delivered before a recent meeting of the Cleveland section of the Society of Automotive Engineers. Flying under poor visibility is one of the greatest problems of the aviator.

In addition to the efforts that will be focused by cities on the smoke nuisance, Capt. Woolson mentioned as factors that will tend to improve conditions the electrification of railroads, more extensive use of oil-burning equipment, general substitution of central heating and lighting plants for isolated equipment, and increased use of smoke-consuming devices.

Oil Company Earnings

Year	1928	1927
Darby Petroleum	$803,558	$415,585
Lago Oil & Transport	2,066,502	7,947,020
Shaffer Oil & Refg	*3,104,122	*1,821,188
Superior Oil	662,152	545,058
First Quarter	**1929**	**1928**
Atlantic Refining	$3,892,600	$1,357,357
Independent Oil	2,018,850	†419,398
Phillips Petroleum	*3,612,879	*3,105,091
Union Oil	2,600,000	2,500,000
Two Months	**1929**	**1928**
Rio Grande Oil	820,080	.....

*Before depreciation and depletion. †Loss.

Cleveland Stock Market

April 19	Par Value	Bid	Asked
Canfield Oil Co	$100	125	143
do pfd	100	103	...
Fred G. Clark	10	10	10½
National Refining	25	...	37
do pfd	100	...	139
Paragon Refining	25	24	24⅞
do pfd	N.P.	42	44
do ctfs. of deposit	...	22¾	23¾

xEx dividend.

YOUR INTERESTS AND OURS ARE MUTUAL—

Unless we furnish you with the type of Air Compressor which will give uninterrupted service and day after day satisfaction, we can sell you but once.

That sort of customer will be of no lasting benefit to us and we would rather not have the sale. On the other hand we, as manufacturers, should have your full cooperation as users, if we are to serve you to your advantage.

'Dayton' Air Compressors Are Built In Capacities from 1 to 52 Cubic Feet

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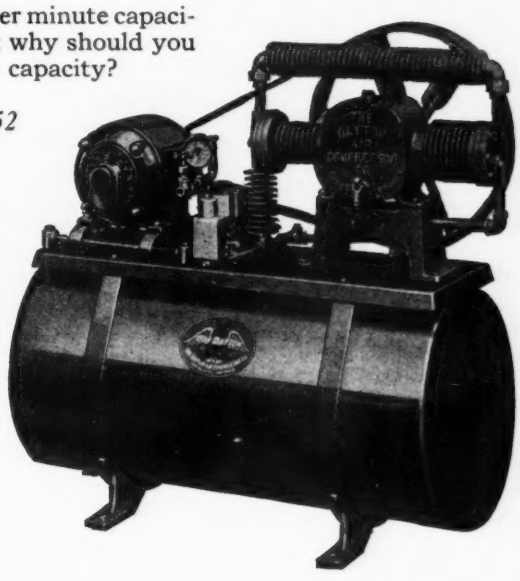
If a 2¼ cub. foot per minute capacity will do your work why should you buy a 5, 7, 9 cub. ft. capacity?

We Build Capacities of 1 to 52 Cub. Ft. Per Minute



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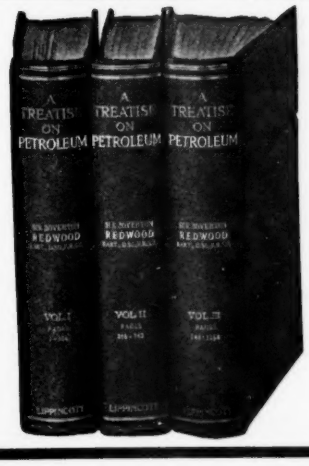

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Standard Oil Stocks on New York Curb

1928 High	1928 Low	1929 High	1929 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Sales	Week Ended First	Week Ended High	Week Ended Low	Week Ended Last	April 20 Change
22⅜	14⅞	18¾	16	£4,126,460	£ 1	Anglo-American Oil	24.4c	June 6, 28	500	16½	16½	†16	16	— ½
21¼	15	18	14½	.....	....	do certificates	.....	.....	400	16½	16½	16½	16½	+ ¼
20½	14⅜	17	14⅜	.....	£ 1	do cts. non-voting	.....	.....	100	15	15	15	15	— ⅛
5	1¼	2⅜	2	(sh) 500 000	N.P.	Atlantic Lobos	.....	.....	200	2⅜	2⅜	2⅜	2⅜	+ ⅜
9¾	3¼	4⅛	3¾	$10,000,000	$50	do pfd	.....	.....	200	3¾	3¾	†3¾	3¾	— ⅜
56	44½	46½	38½	$1,000,000	25	Borne-Scrymser	‡$1S.A.	Apr. 15, 29	100	39	39	39	39	— 3
76	58	74¼	67	10,000,000	50	Buckeye Pipe Line	‡$1Q	Mar. 15, 29	300	71¼	71¾	70½	71¾	+ ⅜
161	117¼	165	140⅛	3,000,000	25	Chesebrough Mfg	‡$1Q	Mar. 31, 29	200	165	*165	160	165	+ 5
23	16	29	17⅛	36,123,350	10	Continental Oil	.....	Dec. 15, 27	18,400	24⅝	25	24	24¼	— ¼
17½	9½	11⅜	8⅜	.....	N.P.	Creole Petroleum	.....	.....	38,600	9	9⅛	8¾	9	0
82	67	75¾	62	1,500,000	50	Cumberland Pipe Line	‡$1Q	Mar. 15, 29	.....	.....	.....	.....	.....	.....
88	64⅛	70½	60	5,000,000	100	Eureka Pipe Line	$1Q	Feb. 1, 29	50	60	60	†60	60	— 2½
13	4¼	6⅝	5½	16,000,000	100	Galena Signal Oil	.....	June 30, 25	200	5½	5½	5½	5½	0
86	26	90	75	4,000,000	100	do new pfd	.....	June 30, 26	40	75	76	†75	75	— 2
89¾	35	85	77	2,000,000	100	do old pfd	.....	June 30, 26	80	77	77	†77	77	— 1
114¾	59¼	115½	89⅝	73,685,700	25	Humble Oil & Refining	‡30cQ	Apr. 1, 29	10,800	114⅞	119¾	112½	117	+ ⅞
290½	176½	320	285	20,000,000	100	Illinois Pipe Line	$10S.A.	Dec. 15, 28	200	309¼	*320	309¼	319¾	0
104	56¾	119⅝	88	(sh) 6,591,458	N.P.	Imperial of Canada	‡25cQ	Mar. 1, 29	12,600	119¼	*119⅝	114½	116	+ ½
91⅞	74⅝	97	81¼	$5,000,000	$50	Indiana Pipe Line	‡$1Q	Feb. 15, 29	300	93	*97	92	92	— 5
55	35	65½	46⅛	(sh) 7,123,544	N.P.	International Petroleum	25c	Mar. 15, 29	22,000	57½	58½	55½	56	+ ¼
32⅜	19⅜	25⅞	21⅜	$6,363,350	12.50	National Transit Co	‡25cQ	Mar. 15, 29	1,100	23½	24⅜	23½	24	+ ⅜
75	38½	85	72	5,000,000	100	New York Transit	.....	July 15, 26	100	82	84	80¼	80¼	+ 1¼
69	56½	63	54	2,000,000	50	Northern Pipe Line	$2S.A.	Jan. 2, 29	.....	.....	.....	.....	.....	.....
83½	58½	74⅜	64⅛	60,000,000	25	Ohio Oil Co	50cQ	Mar. 15, 29	6,700	69⅜	73¾	69¼	72½	+ 4½
84	28	44½	30	10,000,000	25	Penn Mex. Fuel	75c	Dec. 16, 28	300	31	32½	31	31	+ ¼
220	167	50	40	4,000,000	25	Solar Refining	$5S.A.	Dec. 20, 28	200	40¼	40¼	40¼	40¼	0
19	12	22½	13	1,000,000	10	Southern Pipe Line	$1	Mar. 1, 29	2,500	21¾	21¾	19⅛	19⅜	— 1⅞
71⅞	36¾	49⅝	40⅜	20,000,000	25	South Penn Oil	50cQ	Mar. 31, 29	18,500	49⅝	54⅛	49⅝	53⅞	+ 5
102	70	70	64½	1,750,000	50	South West Pa. Pipe Lines	$1	Apr. 1, 29	.....	.....	.....	.....	.....	.....
95⅞	70⅞	103¼	56	230,788,513	25	S. O. Indiana	‡62½cQ	Mar. 15, 29	35,600	60¼	60⅝	59½	59⅞	— ¼
27¾	15	21⅞	18	8,000,000	25	S. O. Kansas	.....	June 16, 24	1,500	19⅛	19¼	19⅛	19¼	+ ⅛
49	44	45¼	38	25,654,516	10	S. O. Kentucky new	40cQ	Mar. 31, 29	6,800	39⅝	40¾	39⅝	40	0
54⅝	39⅞	49⅛	45½	4,649,225	25	S. O. Nebraska	‡62cQ	Mar. 20, 29	200	48	48¼	48	48¼	+ ⅞
134	71	127½	110¼	14,000,000	25	S. O. Ohio	62½cQ	Apr. 1, 29	3,800	117½	*127½	116½	121	+ 4
125	116	124½	116¼	7,000,000	100	do pfd	$1.75Q	Mar. 1, 29	20	119	119	119	119	— 1
23½	16	18	15	861,466	25	Swan Finch Co	30c	Jan. 15, 29	100	15½	15½	15½	15½	0
111	72	133¾	105½	126,154,030	25	Vacuum Oil	$1Q	Mar. 20, 29	8,600	124¼	129	124¼	126	+ 1

*New High †New Low ‡Also Extras

Independent Oils on New York Curb

1928 High	1928 Low	1929 High	1929 Low	Par Value	Stocks	Transactions Sales	Week Ended First	Week Ended High	Week Ended Low	Week Ended Last	April 20 Change
1½	.53	.72	.45	$ 5	Amer. Cons. Oilfields	14,600	.59	.64	.52	.59	+ .03
9½	3⅛	8⅝	4⅝	N.P.	Amer. Maracaibo	5,700	5	5	4⅞	5	+ ⅛
4½	2¼	3⅞	1⅞	$10	Argo Oil	3,900	3¾	*3⅞	3⅝	3¾	0
3¾	3⅜	5¾	3¾	10	Arkansas Nat. Gas	46,500	5⅜	*5¾	5⅜	5⅝	+ ¼
55	32¾	62	50	N.P.	British American Oil	.....	.....	.....	.....	.....	.....
23⅛	3¾	4⅜	2⅝	25c	Carib Syndicate	2,800	2⅞	2⅞	2¾	2⅞	+ ¼
90⅛	54	121⅞	88⅜	$25	Cities Service	66,500	116¾	117	113½	114⅝	— ⅝
.....	.....	.....	.....	.....	do n	28,600	30	30	28⅞	29⅛	— ⅝
103½	94½	98½	88⅜	100	do pfd	2,900	97	97⅜	97	97⅜	+ ⅜
9⅝	8¾	9¼	8⅞	10	do pref. B	100	9¼	9¼	9¼	9¼	+ ⅛
97	88½	95	92½	100	do pref. BB	100	95	*95	95	95	— ⅛
35⅛	27⅜	.....	.....	10	do Bankers	100	106½	106½	106½	106½	— ¾
2¼	1	1½	1⅛	1	Colombia Syndicate	12,100	1¼	1¼	1⅛	1⅛	0
17¾	9¾	15	8¼	....	Colon Oil	2,800	9½	10	9½	10	+ 1
8⅞	6¼	11⅜	6⅞	10	Consolidated Royal	1,200	8¼	8⅞	7⅞	7⅞	— 1⅛
3¼	.76	2½	1⅜	N.P.	Crown Central	16,500	1¾	*2½	1¾	2¼	— ⅜
15	6¾	11¾	8	N.P.	Crystal Oil	500	9½	9¾	9½	9½	+ 1½
50	48	51⅜	51⅛	$100	do pfd	.....	.....	.....	.....	.....	.....
33⅛	8⅛	26	17	N.P.	Darby Petroleum	3,900	17¼	18⅞	17	18	+ 1
13½	7⅞	.....	.....	.....	do trust ctfs	.....	.....	.....	.....	.....	.....
2⅞	1	5	2	N.P.	Derby Oil & Refining	100	3½	3½	3½	3½	— ⅜
21⅛	7½	....	....	N.P.	do pfd	.....	....	....	....	....	.....
2	1	....	....	N.P.	Gibson Oil	.....	....	....	....	....	.....
.53	.15	....	....	N.P.	Gilliland ctfs	.....	....	....	....	....	.....
165	101⅛	167	142⅛	$25	Gulf Oil Corp	18,900	160⅞	164	158	160	— ⅜
7½	5⅝	7½	4½	5	Homaokla Oil	2,000	5	5	4⅝	4¾	0
3⅜	1	2½	1¼	10	Intercontinental Pet.	7,200	2	2	†1¼	2	0
3	⅛	3⅜	1¾	N.P.	Kirby Petroleum	500	2	2	2	2	0
9⅜	5⅛	6⅜	5	N.P.	Leonard Oil & Dev	800	5⅛	5⅛	5⅛	5⅛	0
43⅜	20	36	24¾	N.P.	Lion Oil & Refg	10,200	32⅛	*36	32⅛	35½	+ 2¾
69⅛	48⅛	74⅞	67	$25	Lone Star Gas	100	70¼	70¼	69½	69½	— ½
1⅞	.50	1¼	.60	1	Magdalena Syndicate	3,200	66	69	60	65	+ 4
48½	32	38½	25	N.P.	Margay Oil	100	26	26	25	†25	+ 4¼
40½	40½	....	....	$10	Mexican-Panuco	.....	.....	.....	.....	.....	.....
8	2⅜	6⅜	3⅜	N.P.	Mexico-Ohio Oil	200	4½	4½	4½	4½	0
.74	.20	....	....	$10	Mexico Oil	.....	.....	.....	.....	.....	.....
1¾	.76	1½	1⅛	1	Mountain & Gulf	1,700	1⅛	1¼	1⅛	1⅛	0
28⅛	19½	22⅛	18½	10	Mountain Producers	1,400	19¼	19½	19	19¼	— ¼
5⅝	4¼	5	3⅞	5	New Bradford	600	4⅝	4¾	4½	4½	0
5½	3	3½	3	10	New England Fuel	.....	.....	.....	.....	.....	.....
11⅞	7⅛	9⅜	7¼	1	New Mex. & Ariz	2,300	7½	7¾	7⅜	7½	+ ½
15½	11½	....	....	25	New York Petrol	300	21	21	19¾	19¾	— ¾
40	39¼	....	....	.....	North Amer. Oil Cons.	.....	.....	.....	.....	.....	.....
13¼	8½	11½	8¾	N.P.	North Cent. Texas	2,600	10½	11¼	10¼	11¼	+ ⅞
....	....	19¼	14⅜	N.P.	Oil Stock, Ltd. A	600	15⅜	15¾	15¼	15⅝	+ 1⅜
....	....	17⅛	15	N.P.	do B	.....	.....	.....	.....	.....	.....
26¼	20	23¼	18½	N.P.	Pacific Western Oil	2,500	20	20⅝	19⅜	20¼	+ ¼
6	2¼	3½	2	N.P.	Pandem	2,900	2⅜	2⅝	2⅜	2⅜	— ⅛
15⅝	8½	10¼	7⅛	N.P.	Pantapec	4,600	8⅛	8½	8	8	— ¼
20	10⅝	....	....	$25	Paragon Refg. B. ctfs	.....	.....	.....	.....	.....	.....
.09	.04	....	....	N.P.	Peer Oil Corp	.....	.....	.....	.....	.....	.....
7¾	4⅞	7⅜	4⅜	$10	Pennok Oil	900	5¼	7	5¼	7	+ 2
.....	.....	34½	29¾	N.P.	Petroleum Corp	18,700	28⅛	31⅞	28⅛	30⅛	+ 1¼
5⅜	3¼	....	....	$5	Pittsburgh Oil & Gas	.....	.....	.....	.....	.....	.....
31⅜	26½	30	23	N.P.	Plymouth Oil	800	25¼	25¼	25	25	— ¼
18	8	16	11½	25	Red Bank Oil	3,500	12½	13⅞	12½	13⅛	+ ¼
13	4⅛	8⅛	5	N.P.	Reiter-Foster	3,100	5½	5½	5⅛	5¼	— ⅝
31½	23¼	25¼	24⅛	$25	Richfield pfd	100	24¼	*25¼	24¼	25¼	+ 1
.....	.....	26½	23½	.....	Root Refining pfd	1,900	26	*26½	26	26½	+ ½
12	4⅝	11	7⅛	N.P.	Ryan Consolidated	100	7⅜	7⅜	7⅜	7⅜	0
7¼	5½	5⅞	3⅝	$10	Salt Creek Cons	1,200	4	4	3⅞	3⅞	+ ¼
35	23¼	25⅞	22	10	Salt Creek Prod	1,200	23	23	22	22½	— 1¼
3½	1	2¼	1⅜	5	Savoy Oil	900	2	*2¼	2	2¼	+ ¼
40	27	33⅛	32	25	Shreveport El Dorado	.....	.....	.....	.....	.....	.....
....	....	23	16⅝	N.P.	Texon Oil & Land	4,500	21¾	22¼	20¼	20¼	— 2
22⅞	13	16⅞	11⅝	$10	Tidal Osage	2,200	16¼	*16⅞	16	16	— ⅜
21¼	13⅛	16½	10⅛	10	do non-voting	4,500	16	16¼	15	15⅛	+ ½
93¾	75	89	80	100	Transcontinental pfd	600	83	85	83	85	0
74¼	18	69	66	10	Venezuela-Mexico	300	69	*69	69	69	0
9⅛	4¾	6½	4¼	5	Venezuelan Petrol	1,900	4⅞	4⅞	4¾	4⅞	0
8¼	4⅞	9⅛	5¾	1	Woodley Petroleum	1,800	6⅛	6⅛	5¾	5¾	— ¼
⅜	⅛	5⅜	2¾	25	Y Oil & Gas	100	2¾	2¾	2¾	2¾	— ¼

*New High †New Low

New York Curb Bonds

Week Ending April 19

	High	Low	Last	Change
Beacon Oil 6s '36	112½	111	112½	+1
Cities Serv. 5s '66	89¾	87⅜	88⅜	— ⅜
Cities Serv. G 5½s '42	90⅝	89¾	90¼	+ ¼
Cities Serv. G. P. 6s '43	95	94½	95	+ ½
Cont. Oil 5½s '37	96	95	96	+ ⅛
Empire O & R. 5½s '42	90¼	88¾	89¼	+ ⅜
Gulf Oil 5s '37	100¾	100	100¾	+ ½
Gulf Oil 5s '47	101¼	101¼	101¼	+1
Indep. Oil 6s '39	118½	110½	118½	+7½
Richfield Oil 5½s '31	100⅜	99½	98¾	— ¼
Sun Oil 5½s '39	101	100	100¾	— ¼
Valvoline Oil 7s '37	103½	103½	103½	+ ¼

Oil Dividends

	Amount	Payable	Stock of Record
Cities Service m	10c	June 1	May 15
do stock m	½%	June 1	May 15
do pfd. m	50c	June 1	May 15
do pref. B. m	5c	June 1	May 15
do pref. BBm	50c	June 1	May 15
North Central Texas q	15c	June 1	May 10
Sinclair Cons. pfd. q	$2	May 15	May 1
Texas Pacific C. & O. stk.	2½%	June 30	June 5
Tidal Osage, special	$1	May 1	Apr. 18
Venezuelan Pet. q	5c	May 15	Apr. 30

New York Bonds

Week Ending April 19

	High	Low	Last	Change
Assoc. Oil gold 6s	102	101½	101½	+ ⅜
Atlantic Refg. deb. 5s	101½	100	100	—1⅜
Cal. Pet. 5s	100	98	100	+2
Cal. Pet. 5½s	101⅞	100¼	101⅞	+1⅝
General Asphalt 6s	105¾	104½	104½	0
Humble Oil & Refg. 5s	100½	100	100½	+ ½
Humble Oil & Refg. 5½s	101¼	100⅞	101¼	+ ⅜
Pan Amer. P & T 7s	104¾	104½	104½	0
Pan Amer. P & T 6s	109⅝	106½	109⅝	+3⅛
Pan Amer. P & T 6s	97½	96¾	97¼	+ ⅛
Phillips Pet. 5⅛s	92½	91¾	92	— ⅛
Pure Oil 5½s	98¼	97⅝	98	— ⅛
Shell Union Oil 5s	98	97	97½	0
Simms Pet. 6s	99½	99	99	0
Sinclair Con. Oil 7s	102⅜	101½	101½	— ⅜
Sinclair Con. Oil 6½s	100½	99⅞	99⅞	— ⅜
Sinclair Con. Oil 6s D	99½	98⅜	99⅛	+ ⅜
Sinclair Con. Oil Crude 5½s	97¼	96⅜	97¼	— ⅛
Sinclair Pipeline	94½	93⅝	94¼	+ ⅝
Skelly Oil 5½s	95	93¼	94	+ ½
S. O. N. Y. 4½s	96⅝	96¼	96¼	0
S. O. N. J. 5½s	102½	101½	102⅛	— ⅛
Union Oil of Calif. 6s A	108	107¼	107¼	— ¼
Union Oil of Calif. 1st. 5s C	101	101	101	0
Union Oil of Calif. 5s C	98¼	98	98¼	+1
White Eagle Oil 5½s	102¾	101½	102	+ ⅜

George L. Switzer

Seneca Stations Inc. Is Expanding

ROCHESTER, N. Y.—Eight years ago George L. Switzer entered the oil business indirectly by obtaining employment in a garage here. A year later he bought out the proprietor and three years after that, organized Seneca Stations, Inc., of which he is still president.

The latter company started operations five years ago with one super service station. Today it is operating 11 in Rochester, and plans to build three more this year, according to Milton S. Lane, vice president.

Mr. Switzer is still operating the first garage he took over, as well as two others in the downtown district here. The company sells Seneca products, including Senecablu gasoline. It is distributor for Hyvis motor oil.

Incidentally, the Rochester B.P.O.E. Lodge recently installed Mr. Switzer as its exalted ruler, he being the youngest to attain that honor in the history of that lodge. He is 31 years old.

WASHINGTON, April 19.—The Panama Canal has asked for bids on 425,000 gallons of United States Motor gasoline, for delivery between June 10 and June 20. Bids will be opened in the Washington office of the canal on April 23. The schedule telling what is desired is No. 1955.

There are three absorption plants in Mexico operating now, with total daily capacity of 425 barrels.

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Give full particulars in first letter.

Address Box 317
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Permanent position for college graduate in mechanical engineering for progressive independent oil company.

Must be experienced in Refinery Construction and Maintenance Engineering and have designing ability. Young or middle aged man preferred.

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